



8-1-1976

The Effects of a Family Designed Learning Program Upon Selected School Related Student Attitudes

Scott J. Norsted

Follow this and additional works at: <https://commons.und.edu/theses>

[How does access to this work benefit you? Let us know!](#)

Recommended Citation

Norsted, Scott J., "The Effects of a Family Designed Learning Program Upon Selected School Related Student Attitudes" (1976). *Theses and Dissertations*. 2897.

<https://commons.und.edu/theses/2897>

This Dissertation is brought to you for free and open access by the Theses, Dissertations, and Senior Projects at UND Scholarly Commons. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of UND Scholarly Commons. For more information, please contact und.common@library.und.edu.

THE EFFECTS OF A FAMILY DESIGNED LEARNING PROGRAM UPON
SELECTED SCHOOL RELATED STUDENT ATTITUDES

by

Scott J. Norsted

Bachelor of Science, University of Minnesota, 1969
Master of Arts, St. Cloud State University, 1972

A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Education

Grand Forks, North Dakota

August
1976

T1976
N81

This dissertation submitted by Scott J. Norsted in partial fulfillment of the requirements for the Degree of Doctor of Education is hereby approved by the Faculty Advisory Committee under whom the work has been done.

(Chairman)

Dean of the Graduate School

Permission

Title THE EFFECTS OF A FAMILY DESIGNED LEARNING PROGRAM UPON
 SELECTED SCHOOL RELATED STUDENT ATTITUDES

Department Center for Teaching and Learning

Degree Doctor of Education

In presenting this dissertation in partial fulfillment of the requirements for a graduate degree from the University of North Dakota, I agree that the Library of this University shall make it freely available for inspection. I further agree that permission for extensive copying for scholarly purposes may be granted by the professor who supervised my dissertation work or, in his absence, by the Chairman of the Department or the Dean of the Graduate School. It is understood that any copying or publication or other use of this dissertation or part thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of North Dakota in any scholarly use which may be made of any material in my dissertation.

Signature _____

Date _____

ACKNOWLEDGMENTS

The author wishes to express his appreciation to Dr. Richard Stiggins for his advice and assistance in the preparation of this manuscript. Appreciation is also due to Jean Widell for her assistance in collecting the data for this writing.

Dr. Ivan Dahl, committee chairperson, has given immeasurable encouragement, assistance and advice not only in the preparation of this manuscript but also in every endeavor undertaken during the author's academic career at the University of North Dakota. The author is deeply and sincerely appreciative of his efforts.

The writer is very grateful to committee members Dr. Ervin Behsman, Dr. Marjorie Behringer, Dr. Norman Kulevsky and Dr. Elmer Schmiess for their contributions to the writing process of this manuscript. Statistical analysis assistance rendered by Dr. John Williams is also greatly appreciated.

Finally, the writer extends special appreciation to his wife, Bonnie, for her never ending patience, understanding and encouragement.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	iv
LIST OF TABLES	vii
ABSTRACT	x
Chapter	
I. INTRODUCTION	1
Significance of the Study	
Methodology of Investigation	
Scope of the Study	
Delimitations	
Limitations	
Definition of Terms	
Organization of the Study	
II. REVIEW OF LITERATURE	9
Individualized Instruction and Independent Study	
Independent Study Literature	
Independent Study Assessment	
Interest in Student Attitudes	
Attitude Assessment	
Attitude Assessment and Independent Study	
Parental Involvement in Curriculum Development	
Further Study of Individualized Instruction/ Independent Study Suggested	
III. DESIGN AND PROCEDURES OF THE STUDY	26
Description of the Sample	
Research Design	
Procedures for Data Collection	
Instrument Used for Data Collection	
Hypotheses to be Tested	
Statistical Treatment	

IV. ANALYSIS OF THE DATA	40
------------------------------------	----

Multivariate Test of the Overall Hypotheses
 Separate Univariate Analysis of Covariance
 Data Exploration - Reliability
 Data Exploration - Canonical Analysis
 Data Exploration - Factor Analysis

V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH	99
--	----

Summary
 Conclusions
 Recommendations for Further Research
 Discussion

APPENDIX A. Goal Referenced Model	110
APPENDIX B. Family Designed Learning Letter of Notification of Meeting	113
APPENDIX C. Family Designed Learning Contract	115
APPENDIX D. Pre-Planning Worksheet	117
APPENDIX E. Activity Form for Accomplishing Objectives	119
APPENDIX F. Contract Outline Worksheet	121
APPENDIX G. Communication Record	123
APPENDIX H. Cluster Scores for M.S.A.A. Part II	125
REFERENCES	129

LIST OF TABLES

Table	Page
1. Control Group Selection	30
2. Alpha Reliability of <u>M.S.A.A.</u> - Part II	35
3. Multiple Analysis of Covariance Summary Table	42
4. Analysis of Covariance Summary Table for "Academic Support"	43
5. Means for "Academic Support"	44
6. Analysis of Covariance Summary Table for "Behavioral Constraint"	46
7. Means for "Behavioral Constraint"	47
8. Analysis of Covariance Summary Table for "Acceptance"	48
9. Means for "Acceptance"	49
10. Analysis of Covariance Summary Table for "Co-operation"	50
11. Means for "Co-operation"	51
12. Analysis of Covariance Summary Table for "Intrinsic Motivation"	53
13. Means for "Intrinsic Motivation"	54
14. Analysis of Covariance Summary Table for "Personal Support"	55
15. Means for "Personal Support"	56
16. Analysis of Covariance Summary Table for "Personal Worth as Student"	57
17. Means for "Personal Worth as Student"	58
18. Analysis of Covariance Summary Table for "External Locus of Control"	60

19.	Means for "External Locus of Control"	61
20.	Analysis of Covariance Summary Table for "Marking Basis"	62
21.	Means for "Marking Basis"	63
22.	Analysis of Covariance Summary Table for "Non-Mastery" . .	64
23.	Means for "Non-Mastery"	65
24.	Analysis of Covariance Summary Table for "Perseverance" . .	67
25.	Means for "Perseverance"	68
26.	Analysis of Covariance Summary Table for "Need for Direction"	69
27.	Means for "Need for Direction"	70
28.	Analysis of Covariance Summary Table for "Vocational Relevance"	72
29.	Means for "Vocational Relevance"	73
30.	Analysis of Covariance Summary Table for "Academic Press"	74
31.	Means for "Academic Press"	75
32.	Analysis of Covariance Summary Table for "Non- Communication"	77
33.	Means for "Non-Communication"	78
34.	Analysis of Covariance Summary Table for "Marking Irrelevance"	79
35.	Means for "Marking Irrelevance"	80
36.	Analysis of Covariance Summary Table for "Extrinsic Motivation"	81
37.	Means for "Extrinsic Motivation"	82
38.	Analysis of Covariance Summary Table for "Competition" . .	84
39.	Means for "Competition"	85
40.	Analysis of Covariance Summary Table for "Independence" . .	86
41.	Means for "Independence"	87

42.	Pretest-Posttest Correlation (Reliability)	88
43.	Canonical Correlation for Pre-test Posttest Administration of the <u>M.S.A.A.</u>	90
44.	Coefficients for Canonical Variables of the Pretest of the <u>M.S.A.A.</u>	91
45.	Coefficients for Canonical Variables of the Posttest of the <u>M.S.A.A.</u>	92
46.	Principle Components Solution for Pretest <u>M.S.A.A.</u> Data with Commonality Estimates, Eigenvalues and Percentage of Variance	94
47.	Factor Loadings for Principle Components Solution with Varimax Rotation for <u>M.S.A.A.</u> Pretest	95
48.	Principle Components Solution for Posttest <u>M.S.A.A.</u> Data with Commonality Estimates, Eigenvalues, and Percentage of Variance	96
49.	Factor Loadings for Principle Components Solution with Varimax Rotation for <u>M.S.A.A.</u> Posttest	97

ABSTRACT

The Problem

This study had as its purpose the investigation of the relationship between changes in selected school related student attitudes and participation in an experimental educational program, Family Designed Learning. The objective of Family Designed Learning was the individualization of learning through a goal-referenced model giving students, their parents and school faculty the opportunity to cooperate in the planning of the student's academic program.

Sample

Students at Edina East Secondary Schools, Edina, Minnesota, participating in Family Designed Learning did so voluntarily. These students registered on a one semester or one full academic year basis for one or more courses taken with this experimental program. Sixty eight students were registered for one semester of Family Designed Learning and 44 students were registered for one full academic year. In grades seven through ten 37 students participated in the experimental program with 23 in grade eleven and 52 participating from grade twelve. These 112 Family Designed Learning students plus a grade matched control group of 148 comprises the total sample of 260.

Procedure

Data were gathered for the study by administering the Minnesota School Affect Assessment on a pretest-posttest basis to the Family

Designed Learning students at the beginning and end of their experience in the experimental program. The control group was likewise administered the measurement instrument on a pretest-posttest basis with a random one half of the control group receiving posttest attitude measurement at the end of the first semester. The instrument was administered to the experimental and control groups during the 1974-75 academic year.

Research Questions

1. Do the Family Designed Learning students at Edina East Secondary Schools show changes in selected school related attitudes as compared to non-Family Designed Learning students?
2. Do Family Designed Learning students at Edina East Secondary Schools participating in this program for one half academic year show changes in selected school related attitudes as compared to the Family Designed Learning students participating in this program for one full academic year?
3. Is there a relationship between attitude changes within Family Designed Learning students and their grade level in school?

Summary of the Findings

1. Considering all 19 attitudes measured as a whole, Family Designed Learning students reveal a more positive change in attitude as compared to the control students. Specifically, this difference in attitude change was found with reference to the attitudes of "academic support" and "non-mastery."
2. The length of participation in the Family Designed Learning experience had no effect upon the changes of participating students' attitudes.

3. The grade of the participant in Family Designed Learning is important with regard to attitude change. The higher the grade level of the participant the greater was the positive attitude change.

4. The control group demonstrated a significant grade effect with regard to attitude change. The higher the grade level of the student the greater was the positive attitude change.

CHAPTER I

INTRODUCTION

Purpose of the Study

The purpose of this investigation was to analyze the extent to which an individualized instruction/independent study program, Family Designed Learning, at Edina East Secondary Schools, Edina, Minnesota changed selected school related student attitudes.

Significance of the Study

Educators and administrators in today's educational institutions are being questioned by lawmakers, government agencies, students, and citizens to justify the decisions they make and to justify existing programs. With this emphasis on accountability it is of utmost importance that program evaluators and educators in new programs work together to develop and implement programs of evaluation for these new educational endeavors. Unless an evaluation of even the most complex curricular programs occurs, school districts may be forced to limit their curricula to programs with easily measurable parameters as protection against accountability questions. It is clear that new forms of evaluation must be developed if educators are to develop and implement new programs and foster educational evolution.

House (1973) sees the school as being vulnerable to political pressure. The vulnerability of school boards and the uncertain

position of the superintendent often lead to very conservative school systems. Goals and objectives for the school are usually stated in general, hazy terms in order to protect the system from the deep splits in the American value structure. The schools too often are organized to avoid trouble. Political pressures are more likely to have an effect if there are not commonly agreed upon educational goals and no clear link between objectives and outcomes that could justify behavior, whether educational change or program maintenance.

Clear evaluation procedures and results lead away from the vagueness and compromise upon which the educational system is based and which contribute to accountability conflicts. Evaluation emphasizes value conflicts rather than submerges them. By emphasizing areas of conflict, educational decision making can be made more easily and more decisively.

It is to the important problem of program evaluation that this study was directed. The analysis of one of the stated objectives of a new program was the purpose of this study. The analysis was then used as a part of the total evaluation of the new program and contributed to decision making regarding this program's future.

One of the objectives of the Family Designed Learning program under analysis in this investigation was to affect attitude change. The research in the area of independent study programs, such as Family Designed Learning, leaves unanswered the question of what happens to the school related attitudes of students who participate in the program. Alexander and Hines (1967) offer the following statement regarding the need for further research and development of independent study programs:

More attention should be given to the extent that attitudes toward school and toward particular disciplines are influenced by extended independent study within these areas. We

had some reports of students who, even in slow-moving remedial classes, could not or would not learn. When these students were placed in independent study with special programmed materials they made fair progress. We have known instances where mistaken attempts to provide for bright pupils resulted in giving them two or three times the usual amount of drill which soon brought about loathing for an area formerly liked . . . that some pupils have a favorable shift in attitude toward a subject or the school as a whole was demonstrated by the remedial students mentioned or pupils on individualized programs involving independent study who might have been dropouts. However, we do not as yet know how general this shift is.

In consideration of this need for further research regarding independent study programs, research evidence regarding variations of independent study, such as Family Designed Learning, can be related to five categories supporting one or more of the following propositions (Melnick, 1969):

- I. Independent study is superior to traditional methods in terms of learning efficacy.
- II. Independent study is inferior to traditional methods in terms of learning efficacy.
- III. There is no difference between independent study and traditional methods with respect to learning efficacy.
- IV. An advantage of independent study is that students appreciate the course more or are better motivated for further work.
- V. Personality differences among students are related to success with independent study methods.

Proposition IV is of interest to this investigation. Those advocates of independent study often stress its non-intellectual advantages and point out that they are difficult to measure. Using this argument proponents of independent study programs continue to emphasize its utility even when little objective evidence for academic superiority of the method may exist.

It is to the difficult task of measuring non-intellectual advantages of independent study that this work was guided. The developers and practitioners of the Family Designed Learning program at Edina East

have the specific objective, among others, of fostering changes in student attitudes through this program. This study will attempt to determine if in fact student attitudes are changed in the Family Designed Learning program in comparison to students in the non-Family Designed Learning setting.

Methodology of Investigation

The research methodology of this study involves a quasi-experimental pretest-posttest control group design. The subjects involved in this study are represented by an experimental group, Family Designed Learning, and a comparison, control group. The Minnesota School Affect Assessment was the instrument used to measure the student attitudes in question. Analysis of the data collected was made using both descriptive and inferential statistical procedures. Broad comparisons of attitude change trends were made between Family Designed Learning students of one semester or one academic year compared to the non-Family Designed Learning students of one semester or one academic year. Grade grouping comparisons were also made between experimental and control groups, and within treatment groups.

Scope of the Study

This study is designed to seek answers to the following research questions:

1. Do the Family Designed Learning students at Edina East Secondary Schools show changes in selected school related attitudes as compared to non-Family Designed Learning students?

2. Do Family Designed Learning students at Edina East Secondary Schools participating in this program for one half academic year show changes in selected school related attitudes as compared to the Family Designed Learning students participating in the Family Designed Learning program for one full academic year?
3. Is there a relationship between selected school related attitude changes of Family Designed Learning students and their grade level in school?

Delimitations

The parameters of the problem under investigation were subject to the following delimitations:

1. This study was concerned with 112 students enrolled for either one or two academic semesters in the Family Designed Learning program at Edina East Secondary Schools, Edina, Minnesota during the 1974-75 academic year.
2. This study was concerned with the evaluation of selected variables of attitude change.
3. This study was concerned with Family Designed Learning students in grades seven through twelve at Edina East Secondary Schools, Edina, Minnesota.

Limitations

1. The findings of this study were limited to the 112 students of the Family Designed Learning program.

Generalization beyond this group was dependent upon the degree of correlation between the characteristics of the study group and the group in question.

2. The findings of this study were limited by its design. This limitation comes from the volunteer nature of the Family Designed Learning students as opposed to random selection of the students to be involved in the experimental group.
3. The findings of this study were limited by its exploratory nature. This study assessed many attitudes only some of which were of value in answering the research questions. The implications of this study must then be limited by those attitudes which add to the conclusions of this research.
4. The findings of this study were limited by the reliability and validity of the instrument used to measure attitude changes, the Minnesota School Affect Assessment.

Definition of Terms

Independent Study

Conceptual Definition:

Independent study is considered to be a learning activity largely motivated by the learner's own aim to learn and largely rewarded in terms of its intrinsic values. Such activity as carried on under the auspices of secondary schools is somewhat independent of the class or other group organizations dominant in past and present secondary school instructional practices, and it utilizes the services of teachers and other professional personnel primarily as resources for the learner (Alexander, Hines and Associates, 1967).

Operational Definition. The Family Designed Learning program at Edina East Secondary Schools is an effort to individualize learning through a goal referenced model, giving students, their parents, and staff opportunities to cooperate in (1) planning and selecting learning goals that include the acquisition of skills in the cognitive, affective and interpersonal domains and (2) planning the evaluations and learning strategies.

Attitudes

Conceptual Definition. An attitude is a psychological construct, or latent variable, inferred from observable responses to stimuli, which is assumed to mediate consistency and covariation among these responses (Green, 1954).

Operational Definition. Minnesota School Affect Assessment (M.S.A.A.). The Minnesota School Affect Assessment used affective reactions toward, and feelings of nineteen different facets of school life for its measurement of attitudes.

Individualized Instruction

Conceptual Definition. This term generally refers to specific efforts to focus attention on the learner and the learner's unique personal characteristics (Norton, 1974).

Operational Definition. Individualized instruction, for purposes of this study, refers to the particular adaptation to personal characteristics where the learner, parents, and teacher determined what was to be learned. This definition is also applicable to the term independent study as defined by Edling (1971) and to Family Designed Learning. These concomitant and interrelated definitions are used as the basis of this research project.

Organization of the Study

The remaining chapters in this investigation were organized in the following order: A presentation of the review of the literature related to individualized instruction and independent study, independent study literature, independent study assessment, interest in student attitudes, attitude assessment, attitude assessment and independent study, parental involvement in curriculum development, and further study of individualized instruction/independent study suggested was presented in Chapter II. Chapter III contains a description of the sample and research design, the instrument used for data collection, the hypotheses to be tested and the statistical treatment employed. In Chapter IV a presentation of the findings of the study and the results of the statistical analysis were given. Chapter V was devoted to a summary of the findings, to conclusions which can be drawn from the investigation, recommendations for further research and action within the area of independent study programs and discussion.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this study was to analyze the effects of an independent study program, Family Designed Learning, upon selected school related student attitudes.

This chapter represents a review of the literature available that was relevant to this study. The chapter is organized under the following eight headings:

- I. Individualized instruction and independent study
- II. Independent study literature
- III. Independent study assessment
- IV. Interest in student attitudes
- V. Attitude assessment
- VI. Attitude assessment and independent study
- VII. Parental involvement in curriculum development
- VIII. Further study of individualized instruction/independent study suggested

Individualized Instruction and Independent Study

Jack V. Edling (1971) has designed a model as a basis for matching goals of the school with the goals and strengths of various systems of individualized instruction. The model compares school versus pupil selection of learning objectives, and school versus pupil selection of media for achieving the learning. In Edling's model, when the school

selects both the learning objectives and the media for attainment, the category is termed individually Diagnosed and Prescribed Learning. When the school determines what is to be learned but allows the learner freedom to determine how he/she will attain the objectives the category is termed Self-Directed Learning. In situations where the learner selects the objective but the media are determined by the school, the category is termed Personalized Learning. If the students selects both what is to be learned and how to learn it, the category is Independent Study. This categorization puts individualization on a continuum in relation to school/pupil selection of objectives and/or media.

Roger Mager states in the introduction to a book by Esbensen (1968) that an instruction system is individualized when each student's characteristics play a major part in the selection of objectives, materials, procedures, and time.

Historically, several attempts to individualize instruction through such approaches as independent study were made prior to the "Trump Plan" of 1960. This program revitalized the independent study program through the use of flexible scheduling. In the 1920's the student-teacher contract approach of the Dalton Plan and the group activity approach of the Winnetka Plan were examples of individualization attempts that continued for a short period of time.

The lack of reported assessments of independent study programs may be related to the nature of the program. Many times the process involved is considered to be as important as the product produced. This idea has detracted from the need to make assessment measurements. Another reason for the lack of reported assessments is the recency of the acceptance of independent study as a viable alternative for

students on the secondary level. The literature related to independent study is primarily descriptive in content and rationalizes the use of individualized instruction techniques such as independent study.

Recent interest in individualized instruction has taken several forms: (1) tutoring, (2) correspondence courses, (3) self-paced unit plans such as the Winnetka Plan and the Nova Scotia Independent Study Program, (4) programmed and computerized instruction, (5) independent study programs such as the Trump Plan and the Montessori Method and (6) grouping for individualization (Gibbons, 1970). This represents the vast area covered by the terms individualized instruction and independent study and the problem of developing a concise definition of the area of interest.

The principle of individualizing instruction has not been accepted by many educators or laymen. Therefore, the accountability of these programs is constantly in question. Rationalization of such programs is a great concern for educators.

R. F. Mager (1968) says:

One of the important goals of teaching is to prepare the student to use the skills and knowledge he has learned to prepare him to learn more about the subjects he has been taught. One way of reaching this goal is to send the student away from the learning experience with a tendency to approach rather than to avoid the subject of study.

Individualized instruction attempts to give each child varying learning experiences depending on his/her needs. This attempt can range from a tightly prescribed sequence of instruction to highly nonstructural situations. Individualized instruction centers around giving the learner options such as pacing, content selection, goal selection, media choice or combinations (Norton, 1974).

Individualized instruction, such as independent study, should aid the student in determining his own educational model. This educational model should foster the development of favorable attitudes on the part of the student. Independent study, the primary manifestation of individualized instruction, is thought of as a modifier of school related attitudes.

Independent Study Literature

Individualized instruction is by no means a new concept. A historical review of individualized instruction will usually begin with the early philosophers, Socrates and Plato and on through Rousseau and Froebel to recent years when much has been written on the subject (Wagoner, 1973).

Alexander and Hines (1967) describe individualized instruction, as represented by independent study, by five unique patterns used in secondary schools. They are: independent study privileges or option, individually programmed independent study, job oriented independent study, seminars based on independent study and "quest-type" programs for developing special attitudes.

These five categories of independent study are very unique and the development of a continuum seems difficult. This lack of continuity and variety contributes to assessment difficulties.

Brown (1965) represents the state of the literature regarding independent study in secondary schools prior to 1960:

Until quite recently, the notion of Independent Study for high schools was unthinkable. . . . This learning technique was restricted to college use, and even there the scheme has been used with excessive prudence and more than little trepidation. Participation has usually been limited to graduate level students who have passed the acid test of scholarship on numerous occasions.

The writings of B. T. Jensen (1949, 1954) represent the older literature on independent study. This literature was concerned with college students with histories of high achievement and assessed the program on the basis of achieved grades. These high achieving students were found to do well in independent study programs and gained in capacity for independent and cooperative work. Independent study was seen as an advantage to able students.

J. Lloyd Trump (1963) also showed later concern for the rigid use of independent study and seems to project a feeling of little difference between independent study and directed study. "The school . . . will place them in workrooms for independent study according to individual talents and interests."

Five kinds of facilities are needed for comprehensive independent study (1) the learning resource center, (2) the library, (3) the conference room, (4) the relaxation space, (5) the formal study room. Of course if certain students "goof off" too much, the privilege of using the room will be denied them (Trump, 1966).

Two exceptions to the idea that independent study will be limited to honors college students are those of Maria Montessori and A. S. Neill.

Maria Montessori's schools have fostered the independent aspect of self determined learning, although with the inhibiting and funneling atmosphere of the school, where the materials themselves, provide the motivation of directed learning (Sears, 1967).

Summerhill provides a slightly different kind of independent study. There exists an atmosphere wherein the students are independent of the usual pressure of education, peers and parents, so that they can confront themselves and their worlds from a detached point of view. This is the important aspect of Summerhill as independent study, the

study of one's self, one's companions, and one's world. When the student decides to move into the academic world of Summerhill, he moves into a traditional academic setting where "independent study" now means that the student opens himself to the active and receptive pursuit of knowledge (Neill, 1964).

Malley (1967) indicates a swelling of the literature on independent study due to private schools. Private schools turned to independent study for the purpose of providing senior students with an educational experience that will make transition from highly directed education to college as smooth as possible. Many private school students have failed in college and the private schools have sought independent study as a way of providing a college-like atmosphere.

Independent Study Assessment

There has been very little published regarding the evaluation techniques needed to assess individualized instruction/independent study programs. Several evaluation procedures have been constructed but they seem inadequate and additional methods must be found or developed.

Speckhard (1967) has developed a method for assessing independent study. It includes a questionnaire, interviews and standardized tests. The tests are the Watson-Glaser Critical Thinking Appraisal, the Brown Holtzman Survey of Study Habits and Attitudes, and the Iowa Tests of Educational Development. A pretest and posttest procedure was used for each grade level. Separate questionnaires were developed for students and teachers to determine the attitude of the individual toward and understanding of the independent study mode. The questionnaire also revealed the extent the students and teachers behavior was similar to

what the theories advocated. The interview was used to verify the questionnaire results. The standardized tests were used to determine student development toward achieving the objectives of the program and were compared to students from a control school. Speckhard found that students were getting homework done better, used the guidance services more than before and were distracted less from their tasks by other students and the temptation not to study. Teachers, according to Speckhard, felt the students did not use their time well. It was concluded that preparatory and in-service activities needed to be designed to assist the students and teachers in performing their roles in the independent study program.

McLeod (1968) designed a program to predict independent study performance of secondary school students. It included the use of the Gordon Personal Profile, California Test of Mental Maturity, and a locally developed instrument designed to assess responsible student behaviors. The results received from these instruments were combined with information relating to task completion rates. The tasks assigned were done by the teachers with no student optional responses available. Results of this study suggested that some present methods of assigning students to independent study on the basis of general ability are not defensible. The instruments however may be of some value in assessment.

Renz (1970) conducted a survey of 88 schools having independent study programs and found only 26 having a program of evaluation. He found that the changes in attitude, knowledge and skills were assessed by examining one or more of the results of the following eleven different measurements:

- A. standardized achievement tests: ITED and SAT
- B. achievement on teacher designed tests
- C. subjective evaluation of the quality of independent study
- D. surveys and follow-up studies concerned with the attitude toward the program
- E. the Watson-Glaser Critical Thinking Appraisal
- F. the Brown-Holtzman Survey of Study Habits and Attitudes
- G. surveys of facility use
- H. trends in grade point averages
- I. teacher use of in-service opportunities
- J. trends in student course selection patterns
- K. attendance patterns

Renz's recommendations were that each school should investigate alternatives and design an evaluation program that includes currently accepted assessment instruments and practices. Specific instruments designed especially for each situation may be necessary.

Interest in Student Attitudes

The study of attitudes of students has long been accepted as a worthy endeavor. Attitudes have been recognized as either enhancing or inhibiting the educational process. Without a knowledge of a student's attitude, teachers can do little to promote positive attitude development. This rationale has led to many literature contributions regarding attitude measurement.

Sewell (1963) indicates that although there is a considerable degree of inconsistency in the beliefs of high school students, attitudes can be measured and can be changed. Jimerson (1965) believes that student attitudes can be changed by student creative thinking.

Attitudes may interfere with the psychological processes of learning, perception and remembering (Lindzey, 1959). Newcomb (1946) found that errors in an information test were related to the respondent's attitude at the time of testing.

Bond (1940) discovered that emphasizing problem-solving and critical thinking in the classroom produced greater understanding of the generalizations and also induced positive attitude change toward national groups, races, and imperialism.

Laird and Cumbre (1952) suggested that when procedures are used that require greater personal involvement, attitude changes are likely to occur either positively or negatively.

More exposure to the content of a course does not however guarantee the student's attitudes will change regarding the topics being studied (Langey, 1956; Stevenson, 1955).

Albini and Dinitz (1965) offered 73 mentally retarded boys aged seven to fifteen a psychotherapy program in an attempt to promote a more positive attitude toward learning. While few significant differences in attitude occurred between the pre- and post-therapy period, a positive gain in attitude was noted.

Jeffs (1970) conducted a survey of students' attitudes at Clark High School, Las Vegas, Nevada. A student attitude instrument was developed to measure values in six differing areas. The instrument used was a Likert type instrument yielding response-weights for sex and grade level. His findings were not significant, but showed a general positive attitude toward the value of education in these students.

Attitude Assessment

The search for insight into attitudes has its historical roots in the works of Thomas and Znaniecki in 1918. They sought to determine how Polish immigrants in the United States internalized the objects with which they came in contact on the basis of their initial subjective

tendencies toward that object. Access to the personal correspondence of the Polish immigrants gave the investigators an opportunity to be privy to the intimate, candid thoughts of the letter writers and gain access to their attitudes (Gage, 1963).

Attitude measurement attempts have resulted in five basic types of scales being developed, they are: the Thurstone-type scale, the Remmers Master-type scale, the Likert scale, the Guttman scale and the Semantic Differential scale. Thurstone and Remmers rely upon judges evaluating statements and ordering them in terms of equally spaced differences from favorable to unfavorable attitudes. Remmer's Master Attitude Scales stem from:

The search for effective statements or stereotypes would be for statements all of which would validly apply to a psychological continuum representing attitudes toward any and all members of a large group of objects, such as nations, races, sects, institutions, vocations and political parties (Remmers, 1934).

Likert, however, provides the respondent the opportunity to select, on a five-point scale, the degree to which he agrees or disagrees with the provided object statement. Guttman uses the listing of a series of statements related to the same topic. The more checks which are listed the more favorable is the attitude of the respondent.

The semantic differential, used in this study, requires more attention. The semantic differential consists of a number of bi-polar adjectives (e.g. good-bad; strong-weak; active-passive; true-false), against which the subject is asked to judge a particular concept or phrase. The technical problems of validity and reliability are dealt with by Warr and Knapper (1968). These writers are convinced that the semantic differential:

. . . is a very satisfactory measure which can fruitfully be used to measure a wide variety of aspects of person perception . . . direct and indirect, episodic and dispositional perception, involving attributions and expectancies as well as affective responses.

Maguire (1973) states that since the publication of The Measurement of Meaning (Osgood et al., 1957) the semantic differential has found an important place in educational research methodology. It has two basic uses: the first is to measure the connotative meaning of concepts and the second, and of interest to this study, is for structuring an attitude domain. It may be that one is interested in describing a structure of children's attitudes toward school as in the study by Yammamoto, Thomas, and Korns (1969) or the domain of interest may be with teacher perceptions of the value of curriculum objectives as in Maguire's study (1968). Used in this way the semantic differential is an instrument of exploration and not an instrument for confirmation. Maguire concludes that properly conducted research using the semantic differential methodology can result in useful structures for attitude domains.

Nottingham (1970) states: "While there are a number of techniques which could be applied, and which are conveniently set out in Oppenheim (1966), the semantic differential devised and developed by Osgood (1957) answers the needs of a variety of situations."

Within the cognitive domain, curriculum research has a number of methods and instruments available for evaluation. The affective domain of attitudes however, has the reoccurring problem of finding reliable assessment instruments. Although constructed originally as an index of meaning, the semantic differential is, in many ways, an appropriate technique for evaluation in this area.

Several aspects of changing attitudes have been investigated. Jones (1938) studied 77 college students during their four years of college. He noted that "changes were slight and they strengthened already existing attitudes."

Newcomb (1943) demonstrated that home values can be superseded in the minds of students, when the students are surrounded by active, alert and interested faculty members. This area of influence is still in question due to the ambiguity of some results. Others such as Jacob (1957) and Lazarfeld and Thielens (1958) help to cloud this area with results backing the no-influence upon attitude hypothesis.

The question of the influence of school upon the attitudes of the students toward that institution is reflected in a study of sixth grade and junior high school students. It was shown that as the students attended school, their attitudes underwent a negative change toward the school during the academic year. Furthermore, the change occurred from October to January. Measurement in May showed little change from the measures made in January (Flanders, 1968).

Paschal and Williams (1970) conducted a study with Black and Puerto Rican senior students enrolled in their Upward Bound Program at the University of Florida. The researchers attempted to determine whether or not the students' self image could be improved through the use of a Carl Rogers type of permissiveness was valid. Paschal and Williams felt that the free give and take discussions were essential for the kind of growth they were attempting to foster. The researcher's instruments included the Maryland Self-Concept as a learner scale, the Operation Head Start Worker's Attitude Scale and the Dogmatic Scale. The last instrument measures differences in openness and closedness of

belief systems. Their conclusions were that the Black male students did not respond well under a permissive environment and that the girls responded best in this environment.

Attitude Assessment and Independent Study

The relationship between attitudes, attitude changes and independent study has been questioned by few. The reason for this may again be the difficulty in making measures in this realm. A few investigators have shown some interest, however, in attitudes as related to independent study.

Kornhauser (1930) comments on the relationship between attitudes and independent study. "The changes were, on the average, very slightly in the direction of less uniformity. . . . The attitudes and attitude changes of individuals bear no clear relationships to their intelligence and economic knowledge."

McLeod (1968) substantiated this finding in a study involving 300 high school students enrolled in J.F.K. High School in Fremont, California. He concluded that the low correlations between general ability and the criterion tasks may suggest that some present methods of assigning students to independent study on the basis of general ability are not defensible.

Bigelow and Egbert (1968) state that under random registration procedures at Brigham Young University for a course in teacher education there were no significant personality differences between successful and unsuccessful independent study students.

Yawin (1972) used three Purdue Master Attitude scales in a study of what happened to the attitudes of eleventh and twelfth grade students

who participated in a program of independent study. The study included a pretest-posttest design with a control group. His results revealed that the students after one year in independent study are more favorably inclined toward listening to their teachers, writing reports, and taking mathematics. He concluded that some students can profit from independent study and this is reflected in their great willingness to listen and write. He also concluded that choice makes some traditional forms of education desirable to students. Yawin interpreted these results as having significance as evidence of a stifling of the desire to learn by the traditional classroom. This study is the first of its kind dealing with attitude change and independent study programs.

Parental Involvement in Curriculum Development

Parental involvement in curriculum development and planning seems to be in an embryonic stage. The growth so far seems to be partly fostered by the growing demand for educational accountability. The Family Designed Learning Program under consideration is a manifestation of the desire by parents for participation in determining what their children learn. The beginnings of other parental curriculum selection and development programs are starting to appear in the educational literature.

Divoky (1974) describes a movement by parents in the Lagunitas School District in San Geronimo, California, and other areas in the United States to get back to the old-fashioned alternative. This movement has been the reaction to what these parents see as a drifting toward increasingly permissive, sloppy, and beside-the-point schooling. These parents, belonging to several organizations across the country,

are demanding an alternative no nonsense education for their children. The result has been the creation of several so-called "right of center" educational alternatives in various areas across the country. In the Lagunitas school district an Advance Basic Capabilities program has been initiated. Parental feedback is a large part of this program in describing physical, mental, and emotional strengths and weaknesses of their children, their long and short range goals for their children and what they expect from the teacher. The setting for this program is a teacher controlled self-contained classroom.

This question of ideology of educational approach may never be removed. The question of parental involvement in decision-making, community control and responsiveness can be important only if parents have the right to choose the kind of schooling they want for their children.

Family Designed Learning originated as a program sponsored by the education department of the College of St. Scholastica in Duluth, Minnesota in cooperation with the West End Parochial School, during the 1971-72 school year. This program provided a new relationship between the parent, the student and the educator. Every family, on an individual basis decided for itself what the family's children should learn in school. Esbensen (1973) stresses that the decision-making process within the family opens up opportunities for communication between parent and child making the arrangement revolutionary in the best sense of the word. The basis of the Duluth program involved the development of an educational contract to satisfy agreed-upon objectives as developed jointly by the teacher, the parents and the student. The basic goal of individualized instruction, as it pertained to family decision-making

in this program, was to foster self-directed learning. The measurement of success in the Duluth program was based only on parental involvement in the decision-making process. The program had 100% representation in family conferences and only one family declined to participate at all. Certainly this is little indication of a position regarding the success at facilitating self-directed learning but opens the way to much educational research in the affective domain.

Family Designed Learning's basic premise is represented by Bane and Jencks (1972):

Since there is no evidence that professional educators know appreciably more than parents about what is good for children, it seems reasonable to let parents decide what kind of education their children should have while they are young and to let the children decide as they get older.

Further Study of Individualized Instruction/
Independent Study Suggested

Cyphert (1966) states that studies concerned directly with independent study are inadequate in number and questionable in design.

Melnick (1969) comments that considering the importance of the decisions to be made regarding independent study, the research results have been of minimal use. The implications of the research are inconclusive and varied. Basic questions relate to whether there are some hard-to-test advantages of independent study such as instilling respect for scientific methods of inquiry increasing motivation for further study, encouraging creativity, and developing positive attitudes toward school and learning. These have not been adequately tested or answered.

Research evidence to the present regarding the merits of individualized instruction programs such as independent study is inadequate to draw definite conclusions. The best research questions that could

be asked seem to be not are these programs superior to traditional methods but rather what changes are produced, in what students, in what specific programs, and in what particular learning-teaching environments.

CHAPTER III

DESIGN AND PROCEDURES OF THE STUDY

The purpose of this investigation was to analyze the relationships between school related personal attitudes and the participation in an experimental educational program, Family Designed Learning.

This chapter presents the information dealing with the design and procedures used in conducting this study. Also included is a presentation of the hypotheses to be tested and the statistical procedures used for analysis. Presented below is a topic outline of the information presented in this chapter.

- I. Description of the sample
- II. Research Design
- III. Procedures for data collection
- IV. Instrument used for data collection
- V. Hypotheses to be tested
- VI. Statistical treatment

Description of the Sample

Family Designed Learning is a program organized for cooperative planning through the mutual selection of instructional objectives. The program is the result of school board action July 10, 1972. Independent School District 273, Edina, Minnesota, then adopted a program of independent learning for students in Edina East Secondary Schools for the

1972-73 school year. This adoption was in response to district philosophy that the school system should provide alternative routes in which students can pursue self-initiated goals. This alternative education, independent study, program was functional for two academic years. For the academic year 1974-75, the third year, the program was reorganized into what is now Family Designed Learning.

The objective of Family Designed Learning was individualized learning through a goal-referenced model (Appendix A) which provided students, their parents, and school faculty opportunities to cooperate in educational planning. The four purposes of the program were:

1. To provide an environment which would strengthen the student's sense of purpose.
2. To provide structured opportunities for parents to share actively with their child and appropriate school faculty their knowledge, experience and concern.
3. To increase the possibility of reaching educational solutions for the student that are relevant to his/her personal needs and potential.
4. To require students to reach decisions, that is, solutions to educational problems of all types through a problem-solving approach with parents and staff.

By providing the Family Designed Learning experience it is hoped that parents and students will perceive a wider selection of relevant opportunities for learning, and also increase skills in decision-making through more decision-sharing opportunities.

Students, grade 7-12, voluntarily registered for Family Designed Learning. Parental willingness to participate actively in the program

was required for the student's registration to be considered valid.

After registration in the spring of 1974, group meetings were held with students, parents, and staff present to plan for the following school year. Parents were informed of the meetings, usually three, by personal letter (Appendix B). These meetings were used to describe the form of the individual learning contracts (Appendix C), which are so vital to Family Designed Learning. The development of a common understanding of task responsibilities of students, parents, and staff were then developed.

After these initial meetings, parents and students then completed a pre-planning worksheet (Appendix D). This pre-planning was done in order to identify individual objectives for each student for each course or area of study and to proceed to identification of a method of attainment.

The formal development of a Family Designed Learning contract (Appendix C) was then begun. It included statements of problem definition, objectives, resources, evaluations and target dates. A meeting was then held between parents, student and school faculty to approve the contract.

The parents and student were provided with an activity form (Appendix E) and a contract outline (Appendix F). The activity form for accomplishing objectives allowed the project to be broken down into workable steps and sets time limit goals for each step. The contract outline worksheet in turn identified goals, objectives, target dates, resources and evaluation procedures. The process of planning was now complete.

The program of study began with student-staff contact ranging from daily to a minimum of a weekly communication. A complete log of each communication with the student was kept on a communication record form (Appendix G). Family Designed Learning students could register for a single course requiring one hour of the school day or more courses depending on the particular individuals involved. The number of courses taken by a student within the program were regulated by the Family Designed Learning Coordinator.

Student evaluation in Family Designed Learning is also a group effort. Final evaluation of the completed Family Designed Learning contract is carried out by a predetermined process agreed upon by student, parents, and Family Designed Learning staff. This evaluation generally included all persons involved, although other arrangements were made.

The control group to which the Family Designed Learning participants were compared was selected randomly from the student body not participating in the Family Designed Learning program at Edina East Secondary Schools. A proportional sampling procedure was used to match the proportion of control group individuals at each grade level with the proportion of Family Designed Learning students at each grade level. The control group size was selected at 150 to attempt to match the expected size of total enrollment in Family Designed Learning for the year. Total enrollment in Family Designed Learning was 112 for the 1974-75 academic year as compared to 96 at the time of the control group selection.

The process of student selection for the control group included the use of a random numbers table to select the first name from each

grade's class list. Selecting individuals on a repeating count basis was instituted to provide the needed number of students for each grade. This procedure is summarized in Table 1.

TABLE 1
CONTROL GROUP SELECTION

Grade	School Enrollment	F.D.L.		Control		Selection Repeating	
		N	%	N	%	Start	Count
7	391	7	7	13	7	14	31
8	437	4	4	6	4	69	73
9	440	10	10	15	10	8	29
10	500	10	10	15	10	17	33
11	448	24	25	37	25	6	12
12	<u>471</u>	<u>41</u>	<u>43</u>	<u>64</u>	<u>43</u>	7	7
	2,687	96	100	150	100		

Research Design

The design of the study called for the pretest and posttest administration of the Minnesota School Affect Assessment (M.S.A.A.). The Family Designed Learning students were administered the instrument during the second week of their participation in the experimental program with the control group students all receiving the pretest the same week. The posttest, using the same instrument, was administered at the end of each Family Designed Learning student's experience be it one half year or one full year. One half of the control group, as selected on an alternate person basis, was administered the instrument after one

semester of the school year. The remaining one half of the control group was given the posttest at academic year's end. Dates of actual administration of the instrument appear later.

Adjustments to the experimental and control groups were needed in only one case. Research question number three necessitated a grouping of the experimental subjects in grades seven through ten into one group. This was done because of the very small N in these grade levels in comparison to grades eleven and twelve. The study thus looked at the grade effect using three groupings, grades seven through ten as one and grades eleven and twelve as groups two and three respectively.

The validity and reliability of an experimental design demand examination. Two aspects of this experimental design require mention by the investigator. The testing effect, with the same form of the M.S.A.A. being used for both pre and post testing, must be examined. In this investigation the testing effect has been minimized by the amount of time between administrations, a minimum of four months. The self selection of the Family Designed Learning as an educational alternative as opposed to random selection of participants in this program must also be recognized as a factor in the experimental design. This self selection of Family Designed Learning prevents this study from being a true pretest-posttest control group experimental design.

Campbell and Stanley (1963) describe this research design as the nonequivalent control group design. The key factor in this design is that the control group and the experimental group do not have pre-experimental sampling equivalence. The groups constitute naturally assembled collectives such as classrooms. The assignment of the treatment in question to one group or the other is assumed to be random and

under the control of the experimenter.

The more similar the experimental and the control groups are in their assignment, and the more confirmation of the similarity by pretest scores, the more effective is the control. Assuming this to be the case, this design controls the main effects of history, maturation, testing and instrumentation. The difference for the experimental group between pretest and posttest cannot be explained by main effects of these variables such as would be found affecting both the experimental and the control group.

In an effort to eliminate a pretest-posttest gain specific to the experimental group regarding such foreign factors as history maturation, or testing it can be hypothesized that interaction between these variables and the specific selection differences that distinguish the experimental and control groups is the cause. This interaction is unlikely but most commonly involves maturation. Selection-maturation interaction may be mistaken for the effect of the treatment and thus threaten internal validity of the experiment.

Campbell and Stanley depict regression as the other major internal validity problem for this design. In cases where respondents are self selected, the experimental group having sought out exposure to the treatment, and no control group is available from this same population, regression is of concern. The assumption of uniform regression between experimental and control groups is less likely and the selection-maturation interaction becomes more probable. Although this design is weaker, this control group assists in the interpretation.

Also of some concern to this investigator is what Campbell and Stanley call a threat to external validity, reactive arrangements. The

concern hinges upon the awareness of the experiment, the "I'm a guinea pig" attitude. This consideration must be looked at in the process of generalization of results.

Procedures for Data Collection

Data collecting for Family Designed Learning participants was conducted by the Family Designed Learning paraprofessional in cooperation with the researcher. The collection was made during the student's regular meeting time each week in the room designated for Family Designed Learning.

Control group data collection was conducted in one setting during homeroom in the school auditorium. A list of students participating in the study was distributed to homeroom teachers who were asked to send those students to the auditorium where the researcher conducted the administration of the research instrument.

Identical instructions were given all participants. The purpose of the study and instruction for using the instrument were provided in writing and verbally. The research instruments were administered under no time limitations and the anonymity of the respondent was stressed.

Pretest administration for Family Designed Learning students was conducted the week of September 16, 1974 for first semester and for full year participants. Second semester only Family Designed Learning students were given the pretest assessment the week of January 27, 1975. Pretest administration for both half year and one full year control groups was conducted on September 18, 1974.

Posttest administration of the research instrument for Family Designed Learning students enrolled for the first semester only was

administered the week of January 6, 1975. Posttest for the one semester control group members was administered on January 8, 1975. Posttest administration to Family Designed Learning students of one full academic year and those enrolled second semester only was administered the week of May 5, 1975. The final posttest administration for control group members of one full academic year was given on May 7, 1975.

Instrument Used for Data Collection

The instrument used to measure the attitudes in question in this study was the Minnesota School Affect Assessment. This instrument was produced under funding from the ESEA Title III, project 33-7-4014. The current forms, completed in June of 1973, represent the third version culminating two years of research and development. Form CU, grades four through twelve was used in this investigation.

The M.S.A.A. is divided into two parts. Part I measures student affective reaction toward academic subjects, school personnel, self-expression, peers, and various learning modes and situations. Part two assesses student feelings of academic press, support, constraint, motivation, acceptance and exclusion, self-worth and adequacy of communication within the school setting. Part II of this instrument was selected by the researcher to measure the desired attitudes as unrelated to academic subjects as found in Part I. It consists of 84 true-false statements with choices of somewhat true and somewhat false expanding the response range to four choices. These 84 responses to statements about school related attitudes are clustered into 19 "subscores" (Appendix H) as on an achievement test. This clustering reduces the effort of treating the data. By capitalizing on the things that items have in common,

the data gives more reliable results than single items do. It must be kept in mind that cluster scores are based on a pattern of student responses, but different names may have different meanings for different people. The names of the 19 cluster scores appear in Table 2.

TABLE 2
ALPHA RELIABILITY OF M.S.A.A. PART II

Cluster No.	Alpha Reliability	Cluster Name
1	.80	"Academic Support"
2	.78	"Behavioral Constraint"
3	.74	"Acceptance"
4	.72	"Co-operation"
5	.82	"Intrinsic Motivation"
6	.83	"Personal Support"
7	.72	"Personal Worth as Student"
8	.74	"External Locus of Control"
9	.77	"Marking Basis"
10	.71	"Non-Mastery"
11	.71	"Perseverance"
12	.70	"Need for Direction"
13	.78	"Vocational Relevance"
14	.74	"Academic Press"
15	.84	"Non-Communication"
16	.68	"Marking Irrelevance"
17	.87	"Extrinsic Motivation"
18	.82	"Competition"
19	.74	"Independence"

This instrument was developed under the direction of Dr. Andrew Ahlgren, Associate Director, Center for Educational Development, University of Minnesota and Dr. Donald H. Christianson, Director of Curriculum and Instruction, Independent School District 196, Rosemount, Minnesota. The development of the M.S.A.A. has continued beyond the initial Title III funding period and has focused on the validity of the assessment technique, in terms of how students really feel and in terms of how

relevant the information is to curriculum and instruction. This validation is still limited but results appear promising.

Dr. David W. Johnson (1973) of the Department of Psychological Foundations of Education at the University of Minnesota has conducted follow-up interviews on M.S.A.A. participants for purposes of validation of the instrument. A summary of his report follows:

The results of the interviews indicated that all respondents understood the questions and gave a response which has internal logic to them. They understood the alternative answers provided by the question format and responded to the alternatives in a comprehending manner. All respondents gave similar responses to the questions. They all perceived the questions and the alternative answers in a similar way. From these data it may be concluded that the respondents to the MSAA gave valid responses in the sense that they understood the alternative answers, understood how to respond to the questions, and gave their opinion as the most accurate response.

Another validation study was conducted by Dr. Paul E. Johnson (1973) of the Department of Psychological Foundations of Education at the University of Minnesota. Johnson attempted to establish the reasonableness of the theoretical and empirical constructs used to group items into clusters. Different groups of students were asked to (1) sort items into categories they wished and then name the categories, (2) sort items into given categories, and (3) give category names to given sets of items. Following is a quote from Johnson's report:

On the basis of the results from the forced labeled tasks, the forced unlabeled task, and the value-rating task, the original 14 items which were chosen to measure the constructs described as "Me wanting to learn" have been reduced to 8 items - four each on the clusters to be labeled "Internal Motivation" and "External Motivation." For both clusters, the four items were among those postulated by the investigators to be representative of the constructs. The remaining items, although apparently appropriate to the constructs on face value, were not seen by students as fitting the corresponding descriptions.

A number of modifications to the M.S.A.A. were made based on Dr. Paul E. Johnson's study and are included in the form used for this investigation.

Two studies of test-retest reliability have been conducted on M.S.A.A., the first after about two weeks and the second after about two months. The individual data showed moderate correlations (Kendall tau) of item responses between test and retest, averaging about 0.4 to 0.5. Although this would seem unsatisfactory for characterizing individuals this is not the intent of M.S.A.A. Reliability for groups is high. Item correlations for grade-level averages between October and May assessments rarely are below 0.8 and usually above 0.9 (Ahlgren, Christensen, Lun, 1973). These researchers found profiles to be quite stable between fall and spring assessments with the spring profiles usually falling within a single plot line of the profiles for the previous fall. A general tendency for many individual item averages to shift downward from fall to spring has been observed.

When responses from several items are added together to form cluster scores, the reliability of the cluster scores can be expressed as the proportion of the composite as opposed to unique properties of the individual items. The appropriate index of this internal consistency of cluster scores is the Cronbach alpha coefficient, analogous to the familiar Kuder-Richardson #20 reliability for achievement tests. Alpha coefficients are listed in Table 2. The alphas are calculated on individual responses with corresponding reliabilities for groups being considerably higher, depending upon the size of the group. These values, usually above 0.7, are respectable for attitude scores (Ahlgren, Christensen, Lun, 1973).

Hypotheses to be Tested

In this section are presented the three research hypotheses developed to analyze the effects of a Family Designed Learning program upon selected student attitudes. The hypotheses for this investigation are the following:

1. The Family Designed Learning students at Edina East Secondary schools show no changes in selected school related attitudes in comparison to the non Family Designed Learning students as measured by the multivariate analysis of covariance and the analysis of covariance.
2. The Family Designed Learning students at Edina East Secondary Schools participating in this program for one half academic year show no changes in selected school related attitudes in comparison to the Family Designed Learning students participating in this program for one full academic year as measured by the multivariate analysis of covariance and the analysis of covariance.
3. The Family Designed Learning students at Edina East Secondary Schools show no changes in selected school related attitudes in relation to their respective grade level in school as measured by the multivariate analysis of covariance and the analysis of covariance.

Statistical Treatment

The major statistical technique employed in this study was the multivariate analysis of covariance. The experimental and control groups were compared on nineteen criterion variables, affective measures. In addition an analysis of covariance, was conducted on each of the nineteen variables, keeping in mind these tests are not independent of one another and must be related back to the main test.

Two additional statistical techniques were used to look at the variables themselves. A canonical correlation was utilized with the pretest forming the left hand set and the posttest forming the right hand set. The pretest and posttest were also separately factor analyzed using the principle components solution with varimax rotation.

For purposes of testing hypotheses the .05 level of significance was used for acceptance or rejection.

CHAPTER IV

ANALYSIS OF THE DATA

This study was conducted to determine if students at Edina East Secondary Schools, Edina, Minnesota, participating in a program called Family Designed Learning show change in selected school related attitudes in comparison to a control group of non Family Designed Learning students. These changes were also related to the length of participation in Family Designed Learning and to the grade level of the participants in this program.

The investigation was designed to examine the following hypotheses:

1. The Family Designed Learning students at Edina East Secondary Schools show no changes in selected school related attitudes in comparison to the non Family Designed Learning students as measured by the multivariate analysis of covariance and the analysis of covariance.
2. The Family Designed Learning students at Edina East Secondary Schools participating in this program for one half academic year show no changes in selected school related attitudes in comparison to the Family Designed Learning students participating in this program for one half academic year as measured by the

multivariate analysis of covariance and the analysis of covariance.

3. The Family Designed Learning students at Edina East Secondary Schools show no changes in selected school related attitudes in relation to their respective grade level in school as measured by the multivariate analysis of covariance and the analysis of covariance.

This chapter presents the information dealing with the analysis of the data for this study. Presented below is a topic outline of the information presented in this chapter.

- I. Multivariate Test of the Overall Hypotheses
- II. Separate Univariate Analysis of Covariance
- III. Data Exploration - Reliability
- IV. Data Exploration - Canonical Analysis
- V. Data Exploration - Factor Analysis

Multivariate Test of the Overall Hypotheses

The findings from the multivariate analysis of covariance portion of this study are found in Table 3, Multivariate Analysis of Covariance Summary Table. From this table the possible rejection of the null hypotheses was determined.

From Table 3 it is possible to reject null hypotheses 1 and 3. In both cases the probabilities (Treatment = .032, Grade = .027) are significant at the .05 level. Null hypothesis 2 may be retained as the probability for length of experience is equal to .769 which is well above the .05 level of significance. No overall tests of interaction proved to be significant.

TABLE 3

MULTIPLE ANALYSIS OF COVARIANCE SUMMARY TABLE

Source	df	F	p
Length (L)	19,211	.745	.769
Treatment (T)	19,211	1.738	.032
Grade (G)	38,422	1.520	.027
L X T	19,211	.684	.833
L X G	38,422	1.040	.409
T X G	38,422	1.222	.177
L X T X G	38,422	1.145	.260

Separate Univariate Analysis of Covariance

The findings from the analysis of covariance of each of the nineteen variables are represented in Tables 4 through 41. These tables were analyzed in relation to the main test of the overall hypotheses. Each covariance summary table is followed by a table of means for each of the nineteen variables.

"Academic Support"

The affective measure "academic support" as described by Tables 4 and 5 allows the rejection of hypothesis number one as the F scores are significant at the .01 level for analysis of treatment as a source of variance. The table of means for "academic support" reflects this analysis in the trend of means for the experimental group to be greater than those for the control group. This in turn would support the rejection of hypothesis number one as found in the multivariate test of the

TABLE 4

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "ACADEMIC SUPPORT"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.49$)	1	14.44	14.44		
Grade					
Adjusted for Covariate	2	.53	.27	1.58	N.S.
Adjusted for Covariate & Group	2	.46	.23	1.37	N.S.
Adjusted for Covariate & Length	2	.60	.30	1.79	N.S.
Adjusted for Covariate, Group & Length	2	.52	.26	1.55	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	1.94	1.94	11.55	.01
Adjusted for Covariate & Grade	1	1.87	1.87	10.95	.01
Adjusted for Covariate & Length	1	2.14	2.14	12.74	.01
Adjusted for Covariate, Grade & Length	1	2.06	2.06	12.26	.01
Length					
Adjusted for Covariate	1	.31	.31	1.85	N.S.
Adjusted for Covariate & Group	1	.51	.51	3.04	N.S.
Adjusted for Covariate & Grade	1	.38	.38	2.26	N.S.
Adjusted for Covariate & Group & Grade	1	.57	.57	3.39	N.S.
Treatment X Length	1	.01	.01	.06	N.S.
Treatment X Grade	2	.03	.02	.07	N.S.
Treatment X Length	2	.19	.10	.57	N.S.
Treatment X Grade X Length	2	.60	.30	1.79	N.S.
Within	247	41.38	.17		
Total	259	59.62			

TABLE 5
MEANS FOR "ACADEMIC SUPPORT"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.00	2.31	1.96	2.13	2.18	2.21	1.86	2.12
11	1.86	2.24	1.87	2.26	1.95	2.32	1.92	2.03
12	2.21	1.88	2.03	2.32	2.25	2.25	2.01	2.30

overall hypotheses. The sources of variance, grade and length of experience are not significant at the .05 level and therefore hypotheses number two and three are retained. None of the interactions of the three sources of variance proved to be significant.

"Behavioral Constraint"

The affective measure "behavioral constraint" as described by Tables 6 and 7, allows the retention of the three stated hypotheses regarding this measure. The sources of variance for grade, treatment and length of experience all have F scores which are not significant at the .05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

"Acceptance"

The affective measure "acceptance" as described by Tables 8 and 9, allows the acceptance of the three stated hypotheses regarding this measure. The sources of variance for grade, treatment and length of experience all have F scores which are not significant at the .05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

"Co-operation"

The affective measure "co-operation," as described by Tables 10 and 11, allows the retention of the three stated hypotheses regarding this measure. The sources of variance for grade, treatment, and length of experience all have F scores which are not significant at the .05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

TABLE 6

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "BEHAVIORAL CONSTRAINT"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.51$)	1	21.02	21.02		
Grade					
Adjusted for Covariate	2	.21	.10	.43	N.S.
Adjusted for Covariate & Group	2	.21	.10	.43	N.S.
Adjusted for Covariate & Length	2	.22	.11	.47	N.S.
Adjusted for Covariate, Group & Length	2	.22	.11	.47	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.04	.04	.17	N.S.
Adjusted for Covariate & Grade	1	.04	.04	.17	N.S.
Adjusted for Covariate & Length	1	.04	.04	.17	N.S.
Adjusted for Covariate, Grade & Length	1	.04	.04	.17	N.S.
Length					
Adjusted for Covariate	1	.00	.00	.00	N.S.
Adjusted for Covariate & Group	1	.00	.00	.00	N.S.
Adjusted for Covariate & Grade	1	.01	.01	.04	N.S.
Adjusted for Covariate & Group & Grade	1	.01	.01	.04	N.S.
Treatment X Length	1	.25	.25	1.07	N.S.
Treatment X Grade	2	.88	.44	1.88	N.S.
Grade X Length	2	.80	.40	1.77	N.S.
Treatment X Grade X Length	2	.52	.26	1.16	N.S.
Within	247	57.43	.23		
Total	259	80.11			

TABLE 7
MEANS FOR "BEHAVIORAL CONSTRAINT"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.80	2.96	2.67	2.69	2.67	3.08	2.76	2.72
11	2.74	2.98	2.78	2.55	2.76	3.00	2.82	2.63
12	2.98	2.89	2.89	2.96	3.01	2.83	2.89	2.85

TABLE 8

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "ACCEPTANCE"

Source of Variation	df	SS	MS	F	Sig.
Pretest (r=.60)	1	50.19			
Grade					
Adjusted for Covariate	2	1.02	.51	1.43	N.S.
Adjusted for Covariate & Group	2	1.02	.51	1.43	N.S.
Adjusted for Covariate & Length	2	.76	.38	1.06	N.S.
Adjusted for Covariate, Group & Length	2	.77	.38	1.06	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.00	.00	.00	N.S.
Adjusted for Covariate & Grade	1	.00	.00	.00	N.S.
Adjusted for Covariate & Length	1	.00	.00	.00	N.S.
Adjusted for Covariate, Grade & Length	1	.01	.01	.03	N.S.
Length					
Adjusted for Covariate	1	.36	.36	1.01	N.S.
Adjusted for Covariate & Group	1	.36	.36	1.01	N.S.
Adjusted for Covariate & Grade	1	.20	.20	.56	N.S.
Adjusted for Covariate & Group & Grade	1	.21	.21	.59	N.S.
Treatment X Length	1	.15	.15	.42	N.S.
Treatment X Grade	2	.67	.38	1.07	N.S.
Grade X Length	2	.38	.19	.53	N.S.
Treatment X Grade X Length	2	.16	.08	.22	N.S.
Within	247	87.88	.36		
Total	259	140.20			

TABLE 9
MEANS FOR "ACCEPTANCE"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	1.95	1.81	1.77	1.85	1.91	1.75	1.88	1.89
11	2.29	2.44	1.83	1.87	2.21	2.59	1.94	2.00
12	2.00	1.68	1.91	2.11	1.95	1.84	1.92	2.10

TABLE 10

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "CO-OPERATION"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.58$)	1	34.29	34.29		
Grade					
Adjusted for Covariate	2	.33	.16	.60	N.S.
Adjusted for Covariate & Group	2	.33	.16	.60	N.S.
Adjusted for Covariate & Length	2	.31	.15	.56	N.S.
Adjusted for Covariate, Group & Length	2	.30	.15	.56	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.02	.02	.08	N.S.
Adjusted for Covariate & Grade	1	.02	.02	.08	N.S.
Adjusted for Covariate & Length	1	.03	.03	.11	N.S.
Adjusted for Covariate, Grade & Length	1	.03	.03	.11	N.S.
Length					
Adjusted for Covariate	1	.12	.12	.05	N.S.
Adjusted for Covariate & Group	1	.14	.14	.53	N.S.
Adjusted for Covariate & Grade	1	.10	.10	.38	N.S.
Adjusted for Covariate & Group & Grade	1	.11	.11	.41	N.S.
Treatment X Length	1	.17	.17	.64	N.S.
Treatment X Grade	2	1.01	.50	1.88	N.S.
Grade X Length	2	.22	.11	.41	N.S.
Treatment X Grade X Length	2	.58	.29	1.09	N.S.
Within	247	65.78	.27		
Total	259	102.12			

TABLE 11
MEANS FOR "CO-OPERATION"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	1.94	2.13	2.05	1.88	2.07	2.00	1.82	1.90
11	2.19	2.24	1.93	2.19	2.02	2.14	1.99	2.20
12	2.16	2.16	2.05	2.16	2.09	2.19	2.08	2.17

"Intrinsic Motivation"

The affective measure "intrinsic motivation," as described by Tables 12 and 13, allows the acceptance of the three stated hypotheses regarding this measure. The sources of variance for grade, treatment, and length of experience all have F scores which are not significant at the .05 level. Three of the four interactions for this measure do however show significance. Treatment by grade interaction is significant at the .01 level. Grade by length interaction is significant at the .01 level. Treatment by grade by length interaction is significant at the .05 level. The source of variance, grade, is common to all three of these interactions and apparently is significant only when considered in combination with the other sources of variance.

"Personal Support"

The affective measure "personal support," as described by Tables 14 and 15, allows the retention of the three stated hypotheses regarding this measure. The sources of variance, grade, treatment, and length of experience all have F scores which are not significant at the .05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

"Personal Worth as Student"

The affective measure "personal worth as student," as described by Tables 16 and 17, allows the acceptance of the three stated hypotheses regarding this measure. The sources of variance grade, treatment, and length of experience, all have F scores which are not significant at the

TABLE 12

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "INTRINSIC MOTIVATION"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.53$)	1	24.95			
Grade					
Adjusted for Covariate	2	.39	.19	.78	N.S.
Adjusted for Covariate & Group	2	.45	.23	.94	N.S.
Adjusted for Covariate & Length	2	.35	.18	.74	N.S.
Adjusted for Covariate, Group & Length	2	.32	.16	.66	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.33	.33	1.35	N.S.
Adjusted for Covariate & Grade	1	.29	.29	1.19	N.S.
Adjusted for Covariate & Length	1	.28	.28	1.15	N.S.
Adjusted for Covariate, Grade & Length	1	.25	.25	1.02	N.S.
Length					
Adjusted for Covariate	1	.24	.24	.98	N.S.
Adjusted for Covariate & Group	1	.19	.19	.78	N.S.
Adjusted for Covariate & Grade	1	.20	.20	.82	N.S.
Adjusted for Covariate & Group & Grade	1	.16	.16	.66	N.S.
Treatment X Length	1	.35	.35	1.44	N.S.
Treatment X Grade	2	2.69	1.35	5.53	.01
Grade X Length	2	2.48	1.24	5.08	.01
Treatment X Grade X Length	2	1.53	.76	3.11	.05
Within	247	60.35	.24		
Total	259	90.36			

TABLE 13
MEANS FOR "INTRINSIC MOTIVATION"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.00	2.02	1.92	2.00	2.17	1.96	2.29	2.11
11	2.10	2.30	2.18	2.31	1.66	2.57	2.31	2.42
12	2.00	2.00	2.26	2.37	2.07	2.14	2.22	2.40

TABLE 14

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "PERSONAL SUPPORT"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.61$)	1	48.26			
Grade					
Adjusted for Covariate	2	.40	.20	.62	N.S.
Adjusted for Covariate & Group	2	.42	.21	.65	N.S.
Adjusted for Covariate & Length	2	.36	.18	.56	N.S.
Adjusted for Covariate, Group & Length	2	.39	.20	.62	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.06	.06	.19	N.S.
Adjusted for Covariate & Grade	1	.08	.08	.25	N.S.
Adjusted for Covariate & Length	1	.08	.08	.25	N.S.
Adjusted for Covariate, Grade & Length	1	.11	.11	.34	N.S.
Length					
Adjusted for Covariate	1	.08	.08	.25	N.S.
Adjusted for Covariate & Group	1	.10	.10	.31	N.S.
Adjusted for Covariate & Grade	1	.04	.04	.12	N.S.
Adjusted for Covariate & Group & Grade	1	.07	.07	.22	N.S.
Treatment X Length	1	.00	.00	.00	N.S.
Treatment X Grade	2	.69	.35	1.09	N.S.
Grade X Length	2	.04	.02	.06	N.S.
Treatment X Grade X Length	2	.67	.34	1.05	N.S.
Within	247	79.43	.32		
Total	259	129.59			

TABLE 15
MEANS FOR "PERSONAL SUPPORT"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.34	2.52	1.87	2.22	2.46	2.47	1.98	2.29
11	2.45	3.04	2.09	2.49	2.42	2.86	2.32	2.68
12	2.65	2.37	2.32	2.66	2.56	2.58	2.43	2.54

TABLE 16

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "PERSONAL WORTH AS STUDENT"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.51$)	1	18.35			
Grade					
Adjusted for Covariate	2	.26	.13	.64	N.S.
Adjusted for Covariate & Group	2	.26	.13	.64	N.S.
Adjusted for Covariate & Length	2	.39	.20	.98	N.S.
Adjusted for Covariate, Group & Length	2	.38	.19	.93	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.03	.03	.15	N.S.
Adjusted for Covariate & Grade	1	.03	.03	.15	N.S.
Adjusted for Covariate & Length	1	.08	.08	.39	N.S.
Adjusted for Covariate, Grade & Length	1	.07	.07	.34	N.S.
Length					
Adjusted for Covariate	1	.60	.60	2.94	N.S.
Adjusted for Covariate & Group	1	.65	.65	3.19	N.S.
Adjusted for Covariate & Grade	1	.73	.73	3.58	N.S.
Adjusted for Covariate & Group & Grade	1	.77	.77	3.77	N.S.
Treatment X Length	1	.02	.02	.10	N.S.
Treatment X Grade	2	.37	.19	.93	N.S.
Grade X Length	2	.10	.05	.24	N.S.
Treatment X Grade X Length	2	.12	.06	.29	N.S.
Within	247	50.48	.20		
Total	259				

TABLE 17
MEANS FOR "PERSONAL WORTH AS STUDENT"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	1.68	1.54	1.54	1.76	1.74	1.79	1.64	1.81
11	1.74	2.11	1.74	1.93	1.43	1.95	1.65	1.87
12	1.75	1.62	1.82	1.88	1.75	1.79	1.72	1.86

.05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

"External Locus of Control"

The affective measure "external locus of control," as described by Tables 18 and 19, allows the retention of the three stated hypotheses regarding this measure. The sources of variance grade, treatment, and length of experience all have F scores which are not significant at the .05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

"Marking Basis"

The affective measure "marking basis," as described by Tables 20 and 21, allows the retention of the three stated hypotheses regarding this measure. The sources of variance grade, treatment, and length of experience all have F scores which are not significant at the .05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

"Non-Mastery"

The affective measure, "non-mastery," as described by Tables 22 and 23, allows the rejection of hypothesis number one. The F scores for treatment adjusted for covariate and treatment adjusted for covariate and grade are significant at the .05 level for analysis of treatment as a source of variance. The table of means for "non-mastery" reflects this analysis in the trend of means for the control group to be greater than those for the experimental group. This in turn would support the rejection of hypothesis number one as found in the multivariate test of

TABLE 18

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "EXTERNAL LOCUS OF CONTROL"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.37$)	1	14.00			
Grade					
Adjusted for Covariate	2	.60	.30	.89	N.S.
Adjusted for Covariate & Group	2	.60	.30	.89	N.S.
Adjusted for Covariate & Length	2	.47	.24	.71	N.S.
Adjusted for Covariate, Group & Length	2	.47	.24	.71	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.89	.89	2.65	N.S.
Adjusted for Covariate & Grade	1	.89	.89	2.65	N.S.
Adjusted for Covariate & Length	1	.73	.73	2.17	N.S.
Adjusted for Covariate, Grade & Length	1	.73	.73	2.17	N.S.
Length					
Adjusted for Covariate	1	.80	.80	2.38	N.S.
Adjusted for Covariate & Group	1	.64	.64	1.90	N.S.
Adjusted for Covariate & Grade	1	.67	.67	1.99	N.S.
Adjusted for Covariate & Group & Grade	1	.51	.51	1.52	N.S.
Treatment X Length	1	.06	.06	.18	N.S.
Treatment X Grade	2	.60	.30	.89	N.S.
Treatment X Length	2	.38	.19	.56	N.S.
Grade X Length	2	.06	.03	.09	N.S.
Within	247	83.01	.34		
Total	259	99.67			

TABLE 19
MEANS FOR "EXTERNAL LOCUS OF CONTROL"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	3.50	3.13	3.14	3.38	3.50	3.38	3.38	3.23
11	3.14	3.06	3.19	3.34	3.43	3.15	3.22	3.05
12	3.38	3.16	3.41	3.11	3.32	3.21	3.28	3.12

TABLE 20

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "MARKING BASIS"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.36$)	1	11.36			
Grade					
Adjusted for Covariate	2	.82	.41	1.40	N.S.
Adjusted for Covariate & Group	2	.80	.40	1.37	N.S.
Adjusted for Covariate & Length	2	.82	.41	1.40	N.S.
Adjusted for Covariate, Group & Length	2	.78	.39	1.34	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.16	.16	.55	N.S.
Adjusted for Covariate & Grade	1	.14	.14	.48	N.S.
Adjusted for Covariate & Length	1	.16	.16	.55	N.S.
Adjusted for Covariate, Grade & Length	1	.13	.13	.45	N.S.
Length					
Adjusted for Covariate	1	.01	.01	.03	N.S.
Adjusted for Covariate & Group	1	.01	.01	.03	N.S.
Adjusted for Covariate & Grade	1	.01	.01	.03	N.S.
Adjusted for Covariate & Group & Grade	1	.00	.00	.00	N.S.
Treatment X Length	1	.00	.00	.00	N.S.
Treatment X Grade	2	1.33	.67	2.29	N.S.
Grade X Length	2	1.06	.53	1.82	N.S.
Treatment X Grade X Length	2	.57	.29	.99	N.S.
Within	247	72.21	.29		
Total	259	86.43			

TABLE 21
MEANS FOR "MARKING BASIS"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.25	2.25	2.06	2.17	2.25	2.29	1.96	2.31
11	1.81	2.53	2.32	2.40	1.81	2.16	2.18	2.07
12	2.27	2.16	1.98	2.14	2.21	2.16	2.08	2.01

TABLE 22

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "NON-MASTERY"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.45$)	1	31.94			
Grade					
Adjusted for Covariate	2	.13	.07	.14	N.S.
Adjusted for Covariate & Group	2	.10	.05	.09	N.S.
Adjusted for Covariate & Length	2	.08	.04	.08	N.S.
Adjusted for Covariate, Group & Length	2	.06	.03	.06	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	2.03	2.03	4.02	.05
Adjusted for Covariate & Grade	1	2.00	2.00	3.96	.05
Adjusted for Covariate & Length	1	1.90	1.90	3.76	N.S.
Adjusted for Covariate, Grade & Length	1	1.88	1.88	3.72	N.S.
Length					
Adjusted for Covariate	1	.31	.31	.61	N.S.
Adjusted for Covariate & Group	1	.18	.18	.36	N.S.
Adjusted for Covariate & Grade	1	.26	.26	.52	N.S.
Adjusted for Covariate & Group & Grade	1	.14	.14	.27	N.S.
Treatment X Length	1	.08	.08	.16	N.S.
Treatment X Grade	2	.63	.32	.16	N.S.
Grade X Length	2	.28	.14	.27	N.S.
Treatment X Grade X Length	2	.16	.08	.16	N.S.
Within	247	124.72	.51		
Total	259	159.72			

TABLE 23
MEANS FOR "NON-MASTERY"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.85	2.56	2.60	2.63	2.71	2.56	2.65	2.86
11	2.50	2.91	2.52	2.63	2.64	2.82	2.77	2.74
12	2.85	2.63	2.91	2.86	2.67	2.55	2.89	2.95

the overall hypotheses. The sources of variance, grade and length of experience are not significant at the .05 level and therefore support the retention of hypotheses two and three. None of the interactions of the three sources of variance proved to be significant.

"Perseverance"

The affective measure, "perseverance," as described by Tables 24 and 25 allows the rejection of hypothesis number two. The F scores for analysis of length of treatment are significant at the .01 level. This particular measure supports the retention of the two hypotheses rejected by the multivariate test of the overall hypothesis. "Perseverance" does allow for the rejection of hypothesis two, the non-rejected hypothesis in the multivariate test of the overall hypotheses. The table of means for "perseverance" reflects this analysis in the consistent higher means for students after one year of experience as opposed to students after one half year of experience. The sources of variance, grade and treatment are non significant at the .05 level and therefore support the retention of hypotheses one and three. None of the interactions of the three sources of variance proved to be significant.

"Need for Direction"

The affective measure, "need for direction," as described by Tables 26 and 27, would normally allow rejection of hypothesis number three because the F scores for grade as a source of variance are all significant at the .01 level. This analysis is not allowed however, due to the confounding effects of the interactions, treatment by grade

TABLE 24

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "PERSEVERANCE"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.53$)	1	34.36			
Grade					
Adjusted for Covariate	2	1.16	.58	1.68	N.S.
Adjusted for Covariate & Group	2	1.13	.57	1.65	N.S.
Adjusted for Covariate & Length	2	.97	.48	1.39	N.S.
Adjusted for Covariate, Group & Length	2	.97	.48	1.39	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.65	.65	1.88	N.S.
Adjusted for Covariate & Grade	1	.62	.62	1.79	N.S.
Adjusted for Covariate & Length	1	.38	.38	1.10	N.S.
Adjusted for Covariate, Grade & Length	1	.38	.38	1.10	N.S.
Length					
Adjusted for Covariate	1	2.93	2.93	8.49	.01
Adjusted for Covariate & Group	1	2.66	2.66	7.71	.01
Adjusted for Covariate & Grade	1	2.74	2.74	7.94	.01
Adjusted for Covariate & Group & Grade	1	2.50	2.50	7.25	.01
Treatment X Length	1	.00	.00	.00	N.S.
Treatment X Grade	2	.48	.24	.69	N.S.
Grade X Length	2	.25	.18	.52	N.S.
Treatment X Grade X Length	2	.44	.22	.64	N.S.
Within	247	85.25	.35		
Total	259	124.81			

TABLE 25
MEANS FOR "PERSEVERANCE"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	1.88	1.94	1.85	1.56	1.75	2.00	1.88	1.83
11	2.43	2.50	1.86	2.03	1.86	2.42	1.92	2.24
12	2.11	2.00	1.84	2.08	2.09	2.13	1.92	2.29

TABLE 26

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "NEED FOR DIRECTION"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.58$)	1	37.06			
Grade					
Adjusted for Covariate	2	2.64	1.32	4.89	.01
Adjusted for Covariate & Group	2	2.57	1.28	4.74	.01
Adjusted for Covariate & Length	2	2.58	1.29	4.77	.01
Adjusted for Covariate, Group & Length	2	2.54	1.27	4.70	.01
Treatment (E-C)					
Adjusted for Covariate	1	.37	.37	1.37	N.S.
Adjusted for Covariate & Grade	1	.30	.30	1.11	N.S.
Adjusted for Covariate & Length	1	.34	.34	1.26	N.S.
Adjusted for Covariate, Grade & Length	1	.30	.30	1.11	N.S.
Length					
Adjusted for Covariate	1	.06	.06	.22	N.S.
Adjusted for Covariate & Group	1	.03	.03	.11	N.S.
Adjusted for Covariate & Grade	1	.00	.00	.00	N.S.
Adjusted for Covariate & Group & Grade	1	.00	.00	.00	N.S.
Treatment X Length	1	.79	.79	2.93	N.S.
Treatment X Grade	2	2.43	1.21	4.44	.01
Grade X Length	2	2.35	1.18	4.37	.01
Treatment X Grade X Length	2	.10	.05	.19	N.S.
Within	247	66.80	.27		
Total	259	109.32			

TABLE 27
MEANS FOR "NEED FOR DIRECTION"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.07	2.02	1.83	1.78	2.22	2.04	1.89	1.83
11	2.05	2.01	1.74	2.12	2.14	1.77	1.72	1.88
12	2.13	2.11	1.94	2.01	2.20	2.18	1.91	2.25

and grade by length which are significant at the .01 level. The means table for this measure also supports this conclusion as it shows minimal variation across grades. The sources of variance, treatment and length of experience are not significant at the .05 level and therefore support the acceptance of hypotheses one and two. The other interaction terms also are represented by nonsignificant F scores.

"Vocational Relevance"

The affective measure, "vocational relevance," as described by Tables 28 and 29, allows the rejection of hypothesis number two. The F scores for length of experience adjusted for covariate and grade and adjusted for covariate, group and grade are significant at the .05 level for analysis of length of experience as a source of variance. The table of means for "vocational relevance" supports this analysis as the means for groups compared one half year to one year of experience shows significant, consistent differences. The sources of variance, treatment and grade are not significant at the .05 level and therefore support the acceptance of hypotheses one and three. The interaction of treatment by grade is significant at the .01 level. The other interaction terms are not significant at the .05 level.

"Academic Press"

The affective measure, "academic press," as described by Tables 30 and 31, would normally allow rejection of hypothesis number one because the F scores for treatment as adjusted for covariate and adjusted for covariate and length are significant at the .05 level. This interpretation is not allowed however due to the confounding effects of the interaction between treatment and grade which is significant at the .05

TABLE 28

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "VOCATIONAL RELEVANCE"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.62$)	1	67.97			
Grade					
Adjusted for Covariate	2	1.09	.55	1.37	N.S.
Adjusted for Covariate & Group	2	1.09	.55	1.37	N.S.
Adjusted for Covariate & Length	2	1.35	.67	1.59	N.S.
Adjusted for Covariate, Group & Length	2	1.34	.67	1.59	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.01	.01	.03	N.S.
Adjusted for Covariate & Grade	1	.01	.01	.03	N.S.
Adjusted for Covariate & Length	1	.01	.01	.03	N.S.
Adjusted for Covariate, Grade & Length	1	.00	.00	.00	N.S.
Length					
Adjusted for Covariate	1	1.35	1.35	3.36	N.S.
Adjusted for Covariate & Group	1	1.35	1.35	3.36	N.S.
Adjusted for Covariate & Grade	1	1.61	1.61	4.01	.05
Adjusted for Covariate, Grade & Length	1	1.60	1.60	3.98	.05
Treatment X Length	1	.00	.00	.00	N.S.
Treatment X Grade	2	4.70	2.35	5.85	.01
Grade X Length	2	2.09	1.05	2.61	N.S.
Treatment X Grade X Length	2	.05	.03	.07	N.S.
Within	247	99.39	.40		
Total	259	174.81			

TABLE 29
MEANS FOR "VOCATIONAL RELEVANCE"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	3.09	2.75	3.27	3.27	3.23	3.12	3.06	3.16
11	3.14	2.76	3.08	3.24	3.21	3.68	3.56	3.18
12	3.39	3.32	3.14	2.98	3.26	3.13	3.13	2.86

TABLE 30

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "ACADEMIC PRESS"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.48$)	1	34.95			
Grade					
Adjusted for Covariate	2	1.09	.55	1.23	N.S.
Adjusted for Covariate & Group	2	.93	.47	1.05	N.S.
Adjusted for Covariate & Length	2	1.06	.53	1.18	N.S.
Adjusted for Covariate, Group & Length	2	.92	.46	1.03	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	1.84	1.84	4.13	.05
Adjusted for Covariate & Grade	1	1.68	1.68	3.77	N.S.
Adjusted for Covariate & Length	1	1.81	1.81	4.05	.05
Adjusted for Covariate, Grade & Length	1	1.67	1.67	3.74	N.S.
Length					
Adjusted for Covariate	1	.04	.04	.09	N.S.
Adjusted for Covariate & Group	1	.01	.01	.02	N.S.
Adjusted for Covariate & Grade	1	.01	.01	.02	N.S.
Adjusted for Covariate & Group & Grade	1	.00	.00	.00	N.S.
Treatment X Length	1	.27	.27	.61	N.S.
Treatment X Grade	2	3.33	1.67	3.74	.05
Grade X Length	2	2.05	1.03	2.31	N.S.
Treatment X Grade X Length	2	.31	.16	.35	N.S.
Within	247	110.08	.45		
Total	259	151.44			

TABLE 31
MEANS FOR "ACADEMIC PRESS"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.73	2.63	2.73	2.94	2.66	2.62	2.77	2.81
11	1.79	2.18	2.22	2.55	2.36	2.50	2.42	2.18
12	2.76	2.63	2.78	2.77	2.85	2.89	2.56	2.69

level. The means table for this measure also supports this conclusion as it shows inconsistent differences between experimental and control groups. The sources of variance, length of experience and grade are not significant at the .05 level and therefore do support the acceptance of hypotheses two and three. The other interaction terms also are represented by nonsignificant F scores.

"Non-Communication"

The affective measure, "non-communication," as described by Tables 32 and 33, allows the retention of the three stated hypotheses regarding this measure. The sources of variance grade, treatment, and length of experience all have F scores which are not significant at the .05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

"Marking Irrelevance"

The affective measure, "marking irrelevance," as described by Tables 34 and 35 allows the acceptance of the three stated hypotheses regarding this measure. The sources of variance, grade, treatment, and length of experience all have F scores which are not significant at the .05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

"Extrinsic Motivation"

The affective measure, "extrinsic motivation," as described by Tables 36 and 37 allows the acceptance of the three stated hypotheses regarding this measure. The sources of variance grade, treatment, and length of experience all have F scores which are not significant at

TABLE 32

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "NON-COMMUNICATION"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.51$)	1	22.14			
Grade					
Adjusted for Covariate	2	.41	.20	.82	N.S.
Adjusted for Covariate & Group	2	.41	.20	.82	N.S.
Adjusted for Covariate & Length	2	.45	.28	1.15	N.S.
Adjusted for Covariate, Group & Length	2	.45	.28	1.15	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.00	.00	.00	N.S.
Adjusted for Covariate & Grade	1	.00	.00	.00	N.S.
Adjusted for Covariate & Length	1	.00	.00	.00	N.S.
Adjusted for Covariate, Grade & Length	1	.00	.00	.00	N.S.
Length					
Adjusted for Covariate	1	.03	.03	.12	N.S.
Adjusted for Covariate & Group	1	.03	.03	.12	N.S.
Adjusted for Covariate & Grade	1	.07	.07	.29	N.S.
Adjusted for Covariate & Group & Grade	1	.07	.07	.29	N.S.
Treatment X Length	1	.07	.07	.29	N.S.
Treatment X Grade	2	.34	.17	.70	N.S.
Grade X Length	2	.29	.15	.62	N.S.
Treatment X Grade X Length	2	1.01	.50	2.06	N.S.
Within	247	60.01	.24		
Total	259	83.98			

TABLE 33
MEANS FOR "NON-COMMUNICATION"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.84	2.72	2.85	2.80	2.84	2.66	2.81	2.91
11	2.93	2.74	2.60	2.86	2.82	2.99	2.92	2.80
12	2.70	2.72	2.98	2.91	2.80	2.75	2.95	2.81

TABLE 34

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "MARKING IRRELEVANCE"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.49$)	1	26.03			
Grade					
Adjusted for Covariate	2	1.77	.89	2.96	N.S.
Adjusted for Covariate & Group	2	1.78	.89	2.96	N.S.
Adjusted for Covariate & Length	2	1.72	.86	2.86	N.S.
Adjusted for Covariate, Group & Length	2	1.74	.87	2.89	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.04	.04	.13	N.S.
Adjusted for Covariate & Grade	1	.05	.05	.17	N.S.
Adjusted for Covariate & Length	1	.04	.04	.13	N.S.
Adjusted for Covariate, Grade & Length	1	.08	.08	.27	N.S.
Length					
Adjusted for Covariate	1	.12	.12	.40	N.S.
Adjusted for Covariate & Group	1	.12	.12	.40	N.S.
Adjusted for Covariate & Grade	1	.07	.07	.23	N.S.
Adjusted for Covariate & Group & Grade	1	.10	.10	.33	N.S.
Treatment X Length	1	.95	.95	3.16	N.S.
Treatment X Grade	2	.34	.17	.57	N.S.
Grade X Length	2	.29	.15	.50	N.S.
Treatment X Grade X Length	2	1.01	.51	1.69	N.S.
Within	247	74.24	.30		
Total	259	107.38			

TABLE 35

MEANS FOR "MARKING IRRELEVANCE"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	1.71	1.81	2.04	2.15	1.77	1.69	1.86	1.88
11	2.07	1.56	1.86	2.18	1.57	1.71	1.55	2.13
12	2.03	1.92	2.11	1.73	2.13	1.63	2.13	1.87

TABLE 36

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "EXTRINSIC MOTIVATION"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.52$)	1	34.89			
Grade					
Adjusted for Covariate	2	.57	.29	.81	N.S.
Adjusted for Covariate & Group	2	.52	.26	.73	N.S.
Adjusted for Covariate & Length	2	.55	.27	.76	N.S.
Adjusted for Covariate, Group & Length	2	.51	.25	.70	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.54	.54	1.51	N.S.
Adjusted for Covariate & Grade	1	.49	.49	1.37	N.S.
Adjusted for Covariate & Length	1	.50	.50	1.40	N.S.
Adjusted for Covariate, Grade & Length	1	.48	.48	1.34	N.S.
Length					
Adjusted for Covariate	1	.03	.03	.08	N.S.
Adjusted for Covariate & Group	1	.01	.01	.03	N.S.
Adjusted for Covariate & Grade	1	.01	.01	.03	N.S.
Adjusted for Covariate & Group & Grade	1	.00	.00	.00	N.S.
Treatment X Length	1	.41	.41	1.15	N.S.
Treatment X Grade	2	.74	.47	1.32	N.S.
Grade X Length	2	.67	.38	1.06	N.S.
Treatment X Grade X Length	2	.58	.29	.81	N.S.
Within	247	88.09	.36		
Total	259	128.36			

TABLE 37
MEANS FOR "EXTRINSIC MOTIVATION"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	3.25	3.31	2.82	2.95	3.26	2.94	2.75	2.97
11	3.07	3.06	3.13	3.13	2.64	3.12	3.16	2.76
12	3.18	3.25	3.13	3.02	3.09	3.34	3.09	2.98

the .05 level. Likewise, none of the interactions of the three sources of variance proved to be significant.

"Competition"

The affective measure, "competition," as described by Tables 38 and 39 allows the retention of the three stated hypotheses regarding this measure. The sources of variance grade, treatment, and length of experience all have F scores which are not significant at the .05 level. Of the interactions of the three sources of variance the treatment by grade interaction is significant at the .01 level. Treatment and grade are significant sources of variation only when considered in combination. Other interactions were nonsignificant.

"Independence"

The affective measure, "independence," as described by Tables 40 and 41, allows the acceptance of the three stated hypotheses regarding this measure. The sources of variance grade, treatment, and length of experience all have F scores which are not significant at the .05 level. Of the interactions of the three sources of variance the treatment by grade interaction is significant at the .01 level and the grade by length interaction is significant at the .05 level. The source of variance, grade, for this particular measure is significant only when considered in combination with either treatment or length of experience. Other interactions were nonsignificant.

Data Exploration - Reliability

In an attempt to examine the data collected by this study a pretest-posttest correlation for each of the nineteen attitudinal

TABLE 38

ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "COMPETITION"

Source of Variation	df	SS	MS	F	Sig.
Pretest (r=.58)	1	52.03			
Grade					
Adjusted for Covariate	2	1.11	.55	1.40	N.S.
Adjusted for Covariate & Group	2	1.14	.57	1.45	N.S.
Adjusted for Covariate & Length	2	1.11	.55	1.40	N.S.
Adjusted for Covariate, Group & Length	2	1.14	.57	1.45	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	1.01	1.01	2.56	N.S.
Adjusted for Covariate & Grade	1	1.12	1.12	2.84	N.S.
Adjusted for Covariate & Length	1	1.03	1.03	2.61	N.S.
Adjusted for Covariate, Grade & Length	1	1.06	1.06	2.69	N.S.
Length					
Adjusted for Covariate	1	.00	.00	.00	N.S.
Adjusted for Covariate & Group	1	.02	.02	.05	N.S.
Adjusted for Covariate & Grade	1	.00	.00	.00	N.S.
Adjusted for Covariate & Group & Grade	1	.02	.02	.05	N.S.
Treatment X Length	1	.05	.05	.13	N.S.
Treatment X Grade	2	4.26	2.13	5.41	.01
Grade X Length	2	1.93	.97	2.46	N.S.
Treatment X Grade X Length	2	.13	.07	.18	N.S.
Within	247	97.33	.39		
Total	259	155.92			

TABLE 39
MEANS FOR "COMPETITION"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.49	2.21	1.82	1.96	2.62	2.38	2.14	2.00
11	2.19	2.47	1.98	2.42	2.43	2.76	1.81	2.34
12	2.32	2.49	2.14	2.22	2.23	2.28	2.18	2.23

TABLE 40
ANALYSIS OF COVARIANCE SUMMARY TABLE FOR "INDEPENDENCE"

Source of Variation	df	SS	MS	F	Sig.
Pretest ($r=.62$)	1	48.24			
Grade					
Adjusted for Covariate	2	.16	.08	.28	N.S.
Adjusted for Covariate & Group	2	.15	.08	.28	N.S.
Adjusted for Covariate & Length	2	.15	.08	.28	N.S.
Adjusted for Covariate, Group & Length	2	.14	.07	.24	N.S.
Treatment (E-C)					
Adjusted for Covariate	1	.48	.48	1.65	N.S.
Adjusted for Covariate & Grade	1	.47	.47	1.62	N.S.
Adjusted for Covariate & Length	1	.52	.52	1.79	N.S.
Adjusted for Covariate, Grade & Length	1	.51	.51	1.75	N.S.
Length					
Adjusted for Covariate	1	.07	.07	.24	N.S.
Adjusted for Covariate & Group	1	.11	.11	.38	N.S.
Adjusted for Covariate & Grade	1	.06	.06	.21	N.S.
Adjusted for Covariate & Group & Grade	1	.10	.10	.34	N.S.
Treatment X Length	1	.30	.30	1.03	N.S.
Treatment X Grade	2	2.75	1.38	4.74	.01
Grade X Length	2	1.85	.93	3.20	.05
Treatment X Grade X Length	2	.16	.08	.28	N.S.
Within	247	71.87	.29		
Total	259	123.75			

TABLE 41
MEANS FOR "INDEPENDENCE"

Grade	Pretest				Post-Test			
	Experimental		Control		Experimental		Control	
	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year	1/2 Year	1 Year
7-10	2.83	2.62	3.01	3.00	2.61	2.75	3.06	3.06
11	2.57	2.73	3.09	2.69	2.76	2.66	3.15	2.57
12	2.59	2.72	3.01	2.94	2.66	2.70	2.89	2.80

measures was calculated. These pre-test posttest correlations are presented in Table 42.

TABLE 42
PRETEST-POSTTEST CORRELATION (RELIABILITY)

Affective Measure	Correlation (r)
"Academic Support"	.492
"Behavioral Constraint"	.512
"Acceptance"	.598
"Co-operation"	.579
"Intrinsic Motivation"	.526
"Personal Support"	.610
"Personal Worth as Student"	.511
"External Locus of Control"	.375
"Marking Basis"	.363
"Non-Mastery"	.447
"Perseverance"	.525
"Need for Direction"	.582
"Vocational Relevance"	.624
"Academic Press"	.480
"Non-Communication"	.513
"Marking Irrelevance"	.492
"Extrinsic Motivation"	.521
"Competition"	.578
"Independence"	.624

Attempting to analyze the importance of the pretest-posttest correlations as found in Table 42 it is necessary to compare these correlations with the Cronbach alpha's (measures of homogeneity) found in Table 2. The alpha's range from .68 to .87 with a mean of .76. Pretest-posttest correlations (reliabilities) range from .36 to .62 with a mean of .52.

Data Exploration - Canonical Analysis

To examine the data collected by this study, a canonical analysis was conducted upon the nineteen attitudinal measures used in this investigation with the pretest forming the left hand set and the posttest forming the right hand set. The canonical correlations for the pretest-posttest administration are found in Table 43. Coefficients for canonical variables for the pretest and posttest are found in Tables 44 and 45 respectively.

From examination of the canonical analysis several things are noted about the canonical weights and Tables 43, 44, and 45. It is noted that for the canonical weightings for first and second sets that there are none which exceed .3. Further, the first canonical correlation of .838 may be seen as being an overall measure of reliability, in that for a situation wherein nineteen variables are related to each other on a pre and post testing basis one would expect a much larger canonical correlation. Taking into account the reliability found in Table 42, one may conclude that time has become a major factor in establishing reliability with this instrument. In so far as the first canonical variate may be interpreted it can be seen that three of the variables, "academic support," "personal support," and "perseverance"

TABLE 43

CANONICAL CORRELATION FOR PRETEST-POSTTEST ADMINISTRATION OF THE M.S.A.A.

	Eigenvalue	Canonical Correlation	Wilkes Lambda	Chi-Square	D.F.	Significance
1	.702	.838	.002	1529.717	361	0.0
2	.540	.735	.006	1238.756	324	0.0
3	.496	.704	.013	1051.959	289	0.0
4	.453	.673	.025	887.201	256	0.0
5	.434	.659	.046	741.964	225	0.0

TABLE 44

COEFFICIENTS FOR CANONICAL VARIABLES OF THE PRETEST OF THE M.S.A.A.

	I	II	III	IV	V
"Academic Support"	-.156	.039	-.085	-.083	-.155
"Behavioral Constraint"	-.106	.090	-.264	-.036	-.245
"Acceptance"	-.119	.225	.020	-.258	.109
"Co-operation"	-.016	-.319	.374	.053	.149
"Intrinsic Motivation"	-.153	.041	-.125	.245	-.062
"Personal Support"	-.296	-.123	-.139	-.274	.151
"Personal Worth as Student"	-.017	.101	.094	.264	.190
"External Locus of Control"	-.052	-.098	-.063	-.069	-.205
"Marking Basis"	-.077	-.034	.099	.084	.111
"Non-Mastery"	-.066	-.127	.315	-.085	-.102
"Perseverance"	-.160	-.064	-.096	-.088	.206
"Need for Direction"	-.036	-.460	-.142	-.367	.188
"Vocational Relevance"	.216	.125	-.078	-.266	-.191
"Academic Press"	-.013	-.265	.205	.311	.290
"Non-Communication"	-.163	-.351	-.070	.591	-.094
"Marking Irrelevance"	-.131	.059	.035	-.314	.217
"Extrinsic Motivation"	-.035	-.238	.077	-.285	-.112
"Competition"	-.098	.040	-.408	.271	-.531
"Independence"	.229	-.037	-.464	-.013	.714

TABLE 45

COEFFICIENTS FOR CANONICAL VARIABLES OF THE POSTTEST OF THE M.S.A.A.

	I	II	III	IV	V
"Academic Support"	-.219	.077	-.283	-.113	-.252
"Behavioral Constraint"	-.103	.096	.279	-.052	-.392
"Acceptance"	-.062	.260	-.024	-.316	.154
"Co-operation"	-.072	-.413	.363	.134	.032
"Intrinsic Motivation"	-.014	.077	-.023	.339	.135
"Personal Support"	-.213	.072	-.276	-.197	.219
"Personal Worth as Student"	-.003	-.030	.065	.177	.329
"External Locus of Control"	.044	-.098	.026	-.261	.088
"Marking Basis"	.021	.080	-.037	-.019	.008
"Non-Mastery"	.083	-.076	-.181	.067	-.102
"Perseverance"	-.257	-.122	-.097	-.188	.043
"Need for Direction"	-.077	-.593	-.200	-.265	.119
"Vocational Relevance"	.254	.176	-.297	-.267	-.209
"Academic Press"	.131	-.229	.106	.524	.379
"Non-Communication"	.004	-.165	-.088	.494	-.292
"Marking Irrelevance"	.152	.007	-.071	-.279	.055
"Extrinsic Motivation"	-.009	-.280	.266	-.240	-.238
"Competition"	-.128	.024	-.377	.288	-.419
"Independence"	.272	-.106	-.424	-.007	.773

have a negative weighting and variables "vocational relevance" and "independence" have a positive weighting. Further, these variables are weighted on the pretest and the posttest. It would appear that no simple method is readily available to describe this canonical variate under a simple heading.

Data Exploration - Factor Analysis

To further examine the data collected by this study, a factor analysis was conducted upon the nineteen attitudinal measures used in this investigation. The results of the analysis are found in Tables 46 through 49. Table 46 presents the factor loadings for the principle components solution with varimax rotation for the pretest of the M.S.A.A. Table 47 presents the factor loadings for the principle components solution with varimax rotation for the pretest of the M.S.A.A. Table 48 presents the principle components solution for the posttest of the M.S.A.A. Table 49 presents the factor loadings for the principle components solution with varimax rotation for the posttest of the M.S.A.A.

Tables 47 and 49 have as the limitation of the number of factors Kaiser's criterion for inclusion as a factor. Kaiser's criterion allows the inclusion of only those factors whose eigenvalues exceed 1.00 for consideration for interpretation. The rationale for this criterion is that the sum of the eigenvalues is equal to the number of variables. A variable which has less than 1.00 eigenvalue would be contributing less than "an average" amount of variance. Inspection of the factor loadings restricts even further the number of interpretable factors.

An examination of factor 1 on Table 47 leads one to conclude that factor 1 is loaded on "acceptance," "co-operation," Intrinsic motivation,"

TABLE 46

PRINCIPLE COMPONENTS SOLUTION FOR PRETEST M.S.A.A. DATA WITH
COMMONALITY ESTIMATES, EIGENVALUES, AND PERCENTAGE OF VARIANCE

Attitudinal Measurement	Commonality Estimate	Eigenvalue	Percentage of Variance
"Academic Support"	.582	4.112	21.6
"Behavioral Constraint"	.302	2.364	12.4
"Acceptance"	.481	1.597	8.4
"Co-operation"	.324	1.264	6.7
"Intrinsic Motivation"	.396	1.191	6.3
"Personal Support"	.535	1.008	5.3
"Personal Worth as Student"	.434	.876	4.6
"External Locus of Control"	.291	.842	4.4
"Marking Basis"	.260	.766	4.0
"Non-Mastery"	.082	.741	3.9
"Perseverance"	.364	.648	3.4
"Need for Direction"	.172	.596	3.1
"Vocational Relevance"	.455	.569	3.0
"Academic Press"	.544	.525	2.8
"Non-Communication"	.238	.489	2.6
"Marking Irrelevance"	.208	.461	2.4
"Extrinsic Motivation"	.190	.424	2.2
"Competition"	.186	.293	1.5
"Independence"	.351	.234	1.2

TABLE 47

FACTOR LOADINGS FOR PRINCIPLE COMPONENTS SOLUTION WITH VARIMAX
 ROTATION FOR M.S.A.A. PRETEST

Attitudinal Measure	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
"Academic Support"	.316	.124	.761	-.136	.233	-.035
"Behavioral Constraint"	.233	.482	-.049	.307	.198	-.142
"Acceptance"	.470	-.082	-.032	.064	.614	-.021
"Co-operation"	.395	.093	.169	-.395	.115	.140
"Intrinsic Motivation"	.712	-.107	-.037	-.039	.021	.048
"Personal Support"	.454	.261	.193	-.172	.554	.053
"Personal Worth as Student"	.623	-.023	.088	.039	.285	.015
"External Locus of Control"	-.315	.304	.032	.120	-.083	.340
"Marking Basis"	.450	.267	.043	-.037	.064	-.113
"Non-Mastery"	.023	.014	-.074	-.053	.107	.351
"Perseverance"	.581	.173	-.036	.079	.139	-.164
"Need for Direction"	-.005	.434	.141	-.067	-.007	.080
"Vocational Relevance"	-.591	.176	-.003	.224	-.108	.280
"Academic Press"	-.225	.263	.759	.119	-.187	.034
"Non-Communication"	-.001	.334	.113	.229	-.323	.266
"Marking Irrelevance"	-.142	-.013	.137	.055	-.226	.519
"Extrinsic Motivation"	-.024	.514	.104	-.033	-.046	.007
"Competition"	.317	.303	-.038	-.004	.087	.018
"Independence"	-.011	-.014	.041	.896	-.023	.060

TABLE 48

PRINCIPLE COMPONENTS SOLUTION FOR POSTTEST M.S.A.A. DATA WITH
COMMONALITY ESTIMATES, EIGENVALUES, AND PERCENTAGE OF VARIANCE

Attitudinal Measure	Commonality Estimate	Eigenvalue	Percentage of Variance
"Academic Support"	.573	4.026	21.2
"Behavioral Constraint"	.271	2.229	11.7
"Acceptance"	.428	1.786	9.4
"Co-operation"	.477	1.287	6.8
"Intrinsic Motivation"	.368	1.224	6.4
"Personal Support"	.476	1.004	5.3
"Personal Worth as Student"	.385	.945	5.0
"External Locus of Control"	.245	.815	4.3
"Marking Basis"	.270	.783	4.1
"Non-Mastery"	.142	.666	3.5
"Perseverance"	.339	.628	3.3
"Need for Direction"	.219	.601	3.2
"Vocational Relevance"	.389	.564	3.0
"Academic Press"	.477	.519	2.7
"Non-Communication"	.275	.479	2.5
"Marking Irrelevance"	.291	.442	2.3
"Extrinsic Motivation"	.256	.394	2.1
"Competition"	.181	.366	1.9
"Independence"	.387	.238	1.3

TABLE 49

FACTOR LOADINGS FOR PRINCIPLE COMPONENTS SOLUTION WITH VARIMAX
ROTATION FOR M.S.A.A. POSTTEST

Attitudinal Measure	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
"Academic Support"	.510	-.163	.174	-.074	.689	.122
"Behavioral Constraint"	.274	.464	.069	-.188	-.057	.087
"Acceptance"	.617	-.139	-.093	-.258	-.035	.166
"Co-operation"	.468	-.527	.095	.140	-.027	-.012
"Intrinsic Motivation"	.573	.067	-.220	-.006	-.004	-.031
"Personal Support"	.567	-.277	.289	-.174	-.008	.163
"Personal Worth as Student"	.633	-.121	-.034	-.029	.052	-.135
"External Locus of Control"	-.278	.183	.336	.040	.041	.350
"Marking Basis"	.461	-.089	.240	-.020	.065	-.179
"Non-Mastery"	.004	.001	-.050	.069	.012	.578
"Perseverance"	.638	.062	.032	.030	.034	.016
"Need for Direction"	.078	-.101	.454	.175	.163	-.094
"Vocational Relevance"	-.575	.073	.234	.212	-.046	.109
"Academic Press"	-.094	.105	.343	.089	.688	-.031
"Non-Communication"	-.150	.289	.238	.402	.036	.045
"Marking Irrelevance"	-.047	-.178	-.007	.801	.015	.107
"Extrinsic Motivation"	-.031	.078	.599	-.042	.159	.024
"Competition"	.283	.178	.099	.043	.038	.011
"Independence"	-.112	.724	-.013	.071	.015	-.005

"personal support," "personal worth as student," "marking basis," "perseverance," and "vocational relevance" (negative). These same variables are also those that load the most on posttest Table 49. Factor 1 may be tentatively viewed as an interpersonal relationship factor.

Factor 2 on Table 47 appears to be loaded on "behavioral constraint," "external locus of control," "need for direction," "non-communication," and "extrinsic motivation." Factor 2 on the pretest appears to be a measure of concretistic behavior. While some sources do load similarly on the posttest, some differences do exist. "Cooperation" is negative on the posttest, "independence" is positive on the posttest, while "need for direction" and "extrinsic motivation" are not loaded on the posttest. Factor 2 on the posttest appears to be somewhat more of an abstraction oriented to reality variable.

Factor 3 on Table 47 appears to be loaded on two variables, "academic support" and "academic press." Factor 3 on the pretest corresponds to Factor 5 on the posttest. This factor appears to be a simple measure of academic orientation.

In consideration of the factor loadings on the remaining factors, the additional factors do not seem to yield any interpretive value.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH

Summary

The purpose of this study was to investigate the effects of an individualized instruction/independent study program, Family Designed Learning, upon selected school related student attitudes. The study attempted to answer the following research questions:

1. Do the Family Designed Learning students at Edina East Secondary Schools show changes in selected school related attitudes as compared to non-Family Designed Learning students?
2. Do Family Designed Learning students at Edina East Secondary Schools participating in this program for one half academic year show changes in selected school related attitudes as compared to the Family Designed Learning students participating in this program for one full academic year?
3. Is there a relationship between selected school related attitude changes of Family Designed Learning students and their grade level in school?

The subjects of this investigation were made up of the 112 participants in the Family Designed Learning program at Edina East

Secondary Schools, Edina, Minnesota. The time period of this investigation included the 1974-75 academic year. The control group consisted of 148 non-Family Designed Learning students randomly selected from the student body to match the grade in school of the Family Designed Learning students participating in the study. Other school experiences, school activities, maturation and school disruptions were the same for both the experimental and control groups.

The research design for this investigation is the nonequivalent control group design as described by Campbell and Stanley (1963). This quasi-experimental design involved the measurement of selected school related attitudes on a pretest-posttest basis of both experimental and control groups. The experimental group was administered the pre and post attitude measurement at the beginning and the completion of their Family Designed Learning experience respectively. The control group was administered the pretest attitude measurement at the beginning of the school year. One half of the control group received the posttest administration of the attitude measurement at the end of the first semester and the second half of the control group was administered the posttest of the attitude measurement at the end of the academic year.

The instrument used in this study was the Minnesota School Affect Assessment. The M.S.A.A. was developed with cooperation of the University of Minnesota and Rosemount Public Schools. Part II of form CU was used in this investigation. This form consists of 84 true-false statements about school related attitudes which are grouped into 19 cluster scores representing school related attitudes.

Data obtained from administration of the M.S.A.A. was analyzed using the multivariate analysis of covariance with the experimental and

control groups being compared on the nineteen school related attitudes. An analysis of covariance was also conducted on each of the nineteen variables, relating them back to the main test. The variables themselves were analyzed using two additional techniques. A canonical correlation was utilized with the pretest forming the left hand set and the posttest forming the right hand set. The pretest and posttest were also separately factor analyzed using the principle components solution with varimax rotation.

Conclusions

Three hypotheses were tested in this exploratory study. The conclusions from the data will be enumerated in terms of the three hypotheses.

Hypothesis I

The Family Designed Learning students at Edina East Secondary Schools show no changes in selected school related attitudes in comparison to the non-Family Designed Learning students as measured by the multivariate analysis of covariance and the analysis of covariance.

The multivariate analysis of covariance allows the rejection of this hypothesis. The probability for the analysis of treatment as a source of variance was .032 which was significant at the .05 level of significance thus allowing the rejection of hypothesis one.

Findings from the univariate analysis of covariance supported the rejection of hypothesis one in regard to two specific affective measures. These measures are "academic support" (significant at the .01 level) and "non-mastery" (significant at the .05 level). The

other seventeen affective measures were not significant in regard to treatment as a source of variance.

From these results this researcher concluded that the attitude measures when considered in mass reveal that participation in Family Designed Learning has a positive effect upon changing these attitude measures when compared to students in the normal school environment. This conclusion would not be arrived at if individual attitude measures are studied independently.

Hypothesis 2

The Family Designed Learning students at Edina East Secondary Schools participating in this program for one half academic year show no changes in selected school related attitudes in comparison to the Family Designed Learning students participating for one full academic year as measured by the multivariate analysis of covariance and the analysis of covariance.

The multivariate analysis of covariance does not allow the rejection of this hypothesis. The probability for length of treatment as a source of variance is .769 which does not approach the .05 level of significance.

Findings from the univariate analysis of covariance support the retention of hypothesis 2 in all but two affective measures. "Perseverance" (significant at the .05 level) and "vocational relevance" (significant at the .01 level) would support the rejection of hypothesis 2.

From these results this researcher concluded that considering these attitude measures either in mass or individually that the length

of exposure to the Family Designed Learning experience has no effect upon changes in attitude measures.

Hypothesis 3

The Family Designed Learning students at Edina East Secondary Schools show no changes in selected school related attitudes in relation to their respective grade level in school as measured by the multivariate analysis of covariance and the analysis of covariance.

The multivariate analysis of covariance allows the rejection of this hypothesis. The probability of grade as a source of variance was .027 which is significant at the .05 level of significance thus allowing the rejection of hypothesis 3.

Findings from the univariate analysis of covariance support the rejection of hypothesis 3 in regard to none of the individual affective measures. Individually considered the 19 affective measures show non-significance in regard to grade as a source of variance.

From these results this researcher concluded that the attitude measures when considered in mass reveal that the grade of the subject is important regarding attitude changes. When means are considered changes in attitudes generally reveal an increase with the higher grades, grades eleven and twelve. This conclusion is drawn for both experimental and control groups.

Data exploration allowed the researcher to draw several additional conclusions. Reliability comparisons between pretest-posttest correlations (mean = .52) and Cronbach's alpha's (mean = .76) allows the conclusion to be drawn that the Minnesota School Affect Assessment is probably best used on a one exposure basis. The low mean of .52

for pretest-posttest correlation seems to negate any claims of reliability under a pretest-posttest situation. This conclusion is supported by the canonical analysis. The first canonical correlation of .838 when taken as an overall measure of reliability would be expected to be larger. It seems that time is a major factor in establishing reliability with this instrument.

Factor analysis of the data allowed the researcher to conclude that the nineteen attitudinal measures used in this study were measuring six factors. Of these six factors only three are of interpretive value due to degrees of factor loading. Factor 1 on both the pre and posttests may be tentatively viewed as an interpersonal relationship factor. Factor 2 on the pretest appears to be a measure of concretistic behavior. Factor 2 on the posttest appears to be somewhat more of an abstraction oriented to reality variable. Factor 3 on the pretest and factor 5 on the posttest correspond to each other. This factor appears to be a simple measure of academic orientation. Other factors were of no interpretive value.

The conclusions drawn from this study would seem to support the conclusion drawn by Yawin (1972). Some students can profit from individualized instruction/independent study programs such as Family Designed Learning. The grade of students in these programs is also of significance in describing the benefits of such programs. The benefits of Family Designed Learning are represented in this study by changes in selected school related attitudes.

Recommendations for Further Study

The following recommendations, for further research, are being presented in an effort to provide suggestions for the evaluation of alternative education modes in Edina Public Schools and to provide suggestions for examination of attitudes in relation to individualized instruction/independent study programs in general.

1. Research in school related or other attitudes is recommended using a variety of attitude measuring techniques. The correlation of various techniques will lead to improvement in the validity of the conclusions drawn and refinement of research instruments.

2. Research should be conducted using attitude measures in relation to additional experimental programs and student characteristics. The experimental program characteristics such as areas of study being taken within the program is of research interest. Student characteristics such as sex, grade point average, attendance patterns, participation in selecting options, determining goals and course selection are also of research interest.

3. Research should be conducted on experimental groups which are selected randomly. The random selection of both the experimental and control groups will allow greater ability to generalize from the outcomes of the study.

4. Research is recommended to develop instruments which are designed to adapt to and measure the unique characteristics, including attitude changes, of each individual program being studied. Adaptation of or development of measurement instruments to each study situation should lead to more valid conclusions.

5. Further examination of the length of exposure to the experimental program is recommended. If one academic semester is to be studied it is important to compare first semester to second semester. Extended participation in a program for more than one year should also be researched.

6. Research is recommended regarding experimental programs, such as Family Designed Learning, and their impact upon the knowledge developed by participants. This research should also investigate the relationship between experimental programs and the amount of knowledge gained in specific content areas.

7. The results of this study suggest that a replication of this investigation would be worthwhile. The replication of this study should include the use of another attitude measurement instrument for verification purposes.

Discussion

The purpose of an exploratory study is to examine and describe various aspects and characteristics of that which is being studied. For this investigation it is the Family Designed Learning program at Edina East Secondary Schools, Edina, Minnesota, which was examined and described in an exploratory manner. The specific objective of this exploratory investigation was the examination and description of the characteristics of Family Designed Learning as they apply to changes in participants' school related attitudes. The researcher believes this study to have successfully identified some of the attitudinal aspects and characteristics of this alternative educational program.

Participants in Family Designed Learning do show a more positive change in school related attitudes than their counterparts in the traditional school setting. This is a general conclusion as measured by the research instrument which can be drawn for all student attitudes studied. Specifically the attitudes of "academic support" and "non-mastery" are singled out by the research instrument as being more positively changed by participants in Family Designed Learning. This investigation produced a desired result regarding school related attitudes in general but it would seem that many researchers and evaluators would, for the purposes of evaluation, desire to know more explicitly which attitudes are affected by this alternative educational program. When programs are implemented with specific goals in mind, evaluation of those goals must also be specific and generalized results, although of value, would quite naturally raise additional questions of specificity to which specific research directions must be addressed.

Length of participation in Family Designed Learning seems to have no effect upon changes in school related attitudes. To hypothesize as to a reason for this result one may look at the self selection aspects of this program. Because students are not randomly placed in this program it would seem that students particularly desirous of participating in this program do enroll. The results of the self selection process may cause a particular susceptibility to attitude changes within those individuals. In addition, it may be suggested that knowledge of ones participation in an alternative, experimental program may also have important effects upon school related attitude changes. The consideration of this Hawthorne effect must become a part of all decision making which may result from such studies.

Changes in school related attitudes are effected by the grade level of the participant in the study. It can not be shown from this study that Family Designed Learning students of a particular grade show a greater or lesser attitude change than the comparable grade level student in the non-Family Designed Learning setting. Results reveal that grade level is important to attitude change for all students. This study suggests that greater positive attitude change occurs with higher grade level. Some educators would suggest a difference in attitude change between eleventh graders and twelfth graders due to an increase in career orientation on the part of senior students. This suggestion was not valid for this study as students in grade 11 and 12 tended to group together regarding attitude mean scores and separate themselves from underclass members. For Family Designed Learning participants, their grade level was important regarding changes in school related attitudes but no more so than the grade level of the non-Family Designed Learning students.

The difficulty of making measurements and drawing conclusions within the affective domain is recognized by many who research this area. The development and utilization of appropriate research tools is the key to reliability of results. This study has served to emphasize these facts. Data exploration regarding reliability reveal a necessity for questioning the use of the research instrument used for this particular type of study. The questioned validity must be recognized as a limiting factor if this study's results are to be used regarding decision-making for the Family Designed Learning program.

In this what many educators have referred to as an "age of accountability" the necessity of examining the cognitive and affective

implication for students as a result of the implementation of new educational programs cannot be doubted. It would seem that a growing emphasis in the affective domain is occurring and that this continues to be but a developing area of research for education. History has shown that affective measurement is a very difficult task and this study and others within education have verified this fact. Given this knowledge regarding affective measures and the results of this study it is suggested that generalizability from this study and others must be looked at very closely. The uniqueness of educational programs and the uniqueness of the affective measurement tools employed to investigate these programs not only limits generalizability but also the number of specific conclusions which can be drawn regarding each individual educational program.

Conclusiveness seems to be missing in regard to educational measurement of the affective aspects of educational programs. With this in mind, it is suggested that affective measurement procedures and results for educational programs including Family Designed Learning continue to be developed and looked at closely and their use for decision-making purposes be limited to but a part of the input regarding the educational program in question. As an addition to other means of program evaluation, affective investigations such as this study are of important benefit.

APPENDIX A
GOAL REFERENCED MODEL

GOAL REFERENCED MODEL*

Stage 1: The planning stage.

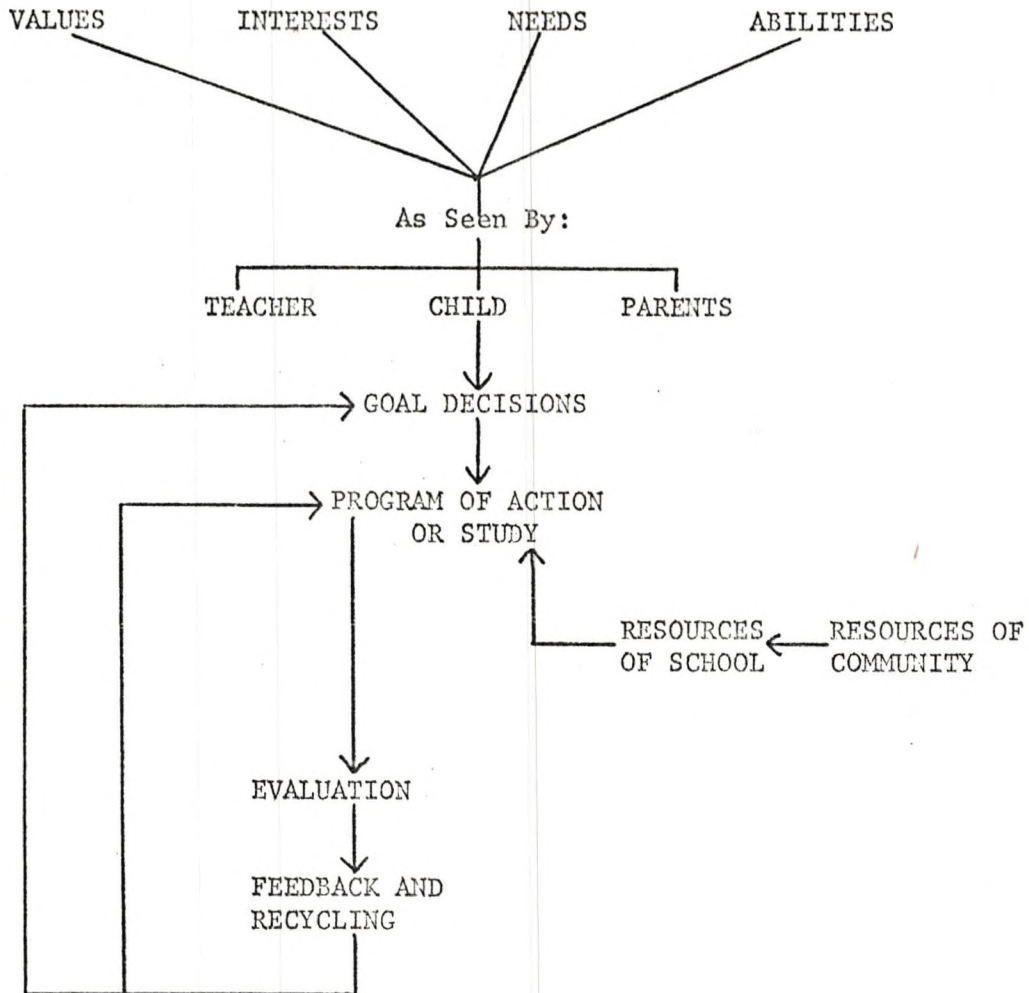
1. Precisely state goals and objectives.
2. Formulate a set of procedures aimed at the attainment of the stated goals and objectives.
3. Formulate procedures in such a way that the action necessary to carry out such procedures can be adequately performed by the one who states the procedures or by some other agent.
4. Make explicit what will count as evidence that a particular goal or objective has been achieved.

Stage 2: The action stage.

1. Utilize the procedures stated in Step 2 of Stage 1.
2. Evaluate the results of the action to determine the effect of the instructional procedures on the achievement of the particular objective for which the procedures were designed.

*NASSP Committee of PSSAS Minutes, American Secondary Education, Vol. IV, No. 1 (December, 1973), p. 16.

MODEL FOR PERSONALIZED CURRICULUM DECISIONS



APPENDIX B

FAMILY DESIGNED LEARNING LETTER
OF NOTIFICATION OF MEETING

April 16, 1974

To the parents of _____

A meeting of the students who registered for Family Designed Learning, their parents, and the teachers involved will be held as follows:

Date: Thursday, April 25

Time: 7:30 P.M.

Place: Library, Normandale Bldg. (Third Floor)

The purpose of the meeting is to explain the form that the individual learning contracts will take. This information will help students, parents, and staff plan together from a common understanding of the tasks necessary in designing an individual learning program.

This will be an important meeting. It is hoped that students and their parents will be able to come. If you cannot attend, please call 927-9721 with that message.

Sincerely,

Marie Wyatt

Assistant to the Campus
Principal for Instruction

MW:bp

APPENDIX C

FAMILY DESIGNED LEARNING CONTRACT

FAMILY DESIGNED LEARNING CONTRACT

_____	_____	_____	_____
Name	Grade	Home Address	Zip Code
_____		_____	
Name of Parent or Guardian		Home Phone Number	
_____		_____	
Counselor		Business Phone Number(s)	

Home Room Teacher's Name & Room Number			

On a separate sheet of paper, design a contract for your specific investigation, including the following parts where applicable:

- I. Problem Definition
In a short paragraph, state your field, area, topic, and/or problem of investigation, or the experience in which you will be actively engaged.
- II. Objectives
State the specific objectives you expect to achieve through the investigation or experience described in I.
- III. Resources
List resources (persons, books, audio-visual, etc.) to be used in this investigation.
- IV. Evaluation
How will this investigation or this experience be evaluated? (Possibilities are self-evaluation, group evaluation, teacher evaluation, or combinations of these. Students must have some responsible part in determining their own evaluation.)
- V. Target Dates
Break your investigation or experience into tasks and set target dates to accomplish each. (You may use provided worksheet.)

When you have read the attached contract, please sign, signifying your approval.

Student's Signature

Parent's or Guardian's Signature

Advisor's Signature

Date

APPENDIX D
PRE-PLANNING WORKSHEET

Pre-Planning Worksheet
Family Designed Learning

Problem definition

(state your intents, purposes)

Set Objectives (must be measurable)

(state specific things you expect or want to achieve)

Seek Alternative objectives

(examine resources, discuss with others, state even those you may think impossible to achieve)

Separate into musts and wants

(the "musts" will help screen out undesirable alternatives)

Assess the risks (of both "musts" and "wants")

(What can go wrong? Why isn't the objective realistic? Do you want to change a "must" to a "want"?)

Prioritize the wants

(Rank order the "wants," the most important being number 1.)

Make balanced choice and write a contract

(After choosing the objectives most important to you, begin writing your contract.)

APPENDIX E

ACTIVITY FORM FOR ACCOMPLISHING OBJECTIVES

ACTIVITY FOR FOR ACCOMPLISHING OBJECTIVES

This contract form should help you to be more effective in completing your project:

1. Breaking the project down into workable steps.
2. Setting time limit goals for each step.

[illegible]

APPENDIX F

CONTRACT OUTLINE WORKSHEET

CONTRACT OUTLINE WORKSHEET

[illegible]

APPENDIX G
COMMUNICATION RECORD

COMMUNICATION RECORD

Student's Name

Scale:

- 1 = little input in decision making
2 = cooperative input in decision making
3 = great input in decision making

[illegible]

APPENDIX H

CLUSTER SCORES FOR M.S.A.A. PART II

CLUSTER SCORES FOR M.S.A.A.

1. "Academic Support:

- 2. My teachers care about how much I learn
- 22. My teachers like to help me learn
- 46. My teachers like to see my work

2. "Behavioral Constraint"

- 4. I like teachers to keep students quiet
- 38. I wish there were more rules in school
- 43. Teachers should punish students who don't follow rules

3. "Acceptance"

- 3. My teachers like me the way I am
- 37. My teachers like me as much as they like other students

4. "Co-operation"

- 5. Other students like to help me learn
- 39. I like to learn by working together with other student
- 48. I like to help other students learn

5. "Intrinsic Motivation"

- 11. I do school work to learn interesting things
- 13. I do school work because it's fun
- 20. I like to learn in school

6. "Personal Support"

- 19. My teachers care about my feelings
- 31. The principal thinks it is important to be my friend
- 44. My teachers think it is important to be my friend

7. "Personal Worth as Student"

24. I am just as important in the school as any other student

32. I feel that I'm doing a good job of learning in school

54. I like to have the teacher see my work

8. "External Locus of Control"

67. When I do poorly in school, it's usually someone else's fault

76. Luck is just as important as work for doing well in school

9. "Marking Basis"

64. I like to be marked on how hard I work

65. I like to be marked on how well I do compared with other students

66. I like to be marked on how much I have improved

10. "Non-Mastery"

75. I like to study lots of things, even if I don't learn them well

81. I like to go on to new topic, even if I haven't learned much

11. "Perseverance"

61. Even when I don't do well in school, I like to keep trying

70. I like to spend as much time as it takes to do well in school

12. "Need for Direction"

58. I like to know exactly what I'm supposed to be learning in class

69. I like my teachers to set clear goals for me

77. I get confused because I don't know why I'm studying some things

13. "Vocational Relevance"

73. I would rather have a job than go to school

79. What I want to do in the world has nothing to do with school

14. "Academic Press"

1. I have to hurry too much to finish my school work

27. My teachers give me too much work to do

15. "Non-Communication"

- 28. My teachers don't really listen when I answer questions
- 47. I have lots of questions I never get a chance to ask
- 50. I would like to be given more chances to say things in class
- 55. I don't get enough time to answer questions in class

16. "Marking Irrelevance"

- 23. I know a lot more than my marks in school show
- 53. Marks in school don't tell much about what people really know

17. "Extrinsic Motivation"

- 8. I do school work to make my teachers happy
- 9. I do school work to make my parents happy
- 10. I do school work to keep my teachers from getting mad at me
- 12. I do school work to be liked by other students

18. "Competition"

- 15. My friends want to do better work than me
- 21. I like to do better work than my friends
- 42. I like to get better marks than other students do

19. "Independence"

- 7. I like to work by myself in school
- 26. I want other students to leave me alone
- 36. I don't like to work in groups

REFERENCES

REFERENCES

- Ahlgren, Andrew, Christensen, Donald J., and Lun, Kin-Shing. Minnesota School Affect Assessment. Student Counseling Bureau, University of Minnesota, 1973.
- Albini, Joseph L. and Dinitz, Simon. "Psychotherapy With Disturbed and Defective Children: An Evaluation of Changes in Behavior and Attitudes." American Journal of the Mentally Deficient, 1965, 69, 560-567.
- Alexander, W. M., Hines, V. A. and Associates. Independent Study in Secondary Schools. New York: Holt, Rinehart and Winston, Inc., 1967.
- Bane, Mary Jo and Jencks, L. "The Schools and Equal Opportunity." Saturday Review, September 16, 1972.
- Bigelow, Gordon S. and Egbert, Robert L. "Personality Factors and Independent Study." Journal of Educational Research, 1968, 42, 37-39.
- Bond, A. "An Experiment in the Teaching of Genetics." Teachers College Contributions to Education. New York: Columbia University Press, 1940.
- Brown, Frank B. "The Renaissance of Individualized Learning." New Approaches to Individualized Instruction. Princeton, New Jersey: Education Testing Service, 1965, p. 68.
- Campbell, Donald T. and Stanley, Julian C. Experimental and Quasi-Experimental Designs for Research. Chicago: Rand McNally, 1963.
- Cyphert, Frederick R. "Independent Study, Panacea? Fraud?" Theory in Practice, 1966, 5, 205.
- Divoky, Diane. "Opting for an Old-Fangled Alternative." Learning. Palo Alto, Calif.: Education Today Co. Inc., 1974, pp. 13-17.
- Edling, Jack V. Individualized Instruction: A Manual for Administrators. Corvallis: Teaching Research Division, Oregon State System of Higher Education, 1971, p. 2.
- Esbensen, Thorwald. Working with Individualized Instruction. Palo Alto, Calif.: Fearon Publishers, 1968.
- _____. "Family-Designed Learning, Accountability as Customer Satisfaction." Phi Delta Kappan. Bloomington, Indiana: Phi Delta Kappa, Inc., 1973, pp. 465-468.

- Flanders, N. A., Morrison, B. M., and Brode, E. L. "Changes in Pupil Attitudes During the School Year." Journal of Educational Psychology, 1968, 59, 334-338.
- Gage, N. L. (ed.). Handbook of Research on Teaching. Chicago: Rand, McNally and Company, 1963.
- Gibbons, Maurice. "What is Individualized Instruction?" Interchange, 1970, 1, 28-52.
- Green, Bert F. "Attitude Measurement." Handbook of Social Psychology. Reading, Mass.: Addison-Wesley, 1954, Ch. 9.
- House, E. R. (ed.). School Evaluation. Berkeley, Calif.: McCulchan, 1973.
- Jacob, P. E. Changing Values in College. New York: Harper, 1957.
- Jeffs, G. A. "Student Attitude Survey-Clark High School." Las Vegas, Nevada: Clark County School District, 1970. ED 011 674.
- Jensen, Barry T. "Independent Study Laboratory Using Self-Scoring Tests." Journal of Educational Research, 1949, 40, 134-137.
- _____. "Instruction and Personality as Factors in Student Performance." Journal of Educational Research, 1954, 47, 529-535.
- Jimerson, Hollie C. "Attitudes Can be Modified by Planning Teaching." Business Education Forum, 1965, 19, 22.
- Johnson, David W. Minnesota School Affect Assessment. Student Counseling Bureau, University of Minnesota, 1973.
- Johnson, Paul E. Minnesota School Affect Assessment. Student Counseling Bureau, University of Minnesota, 1973.
- Jones, V. A. "Attitudes of College Students and the Changes in Such Attitudes During Four Years of College." Journal of Educational Psychology, 1938, 29, 14-25, 114-134.
- Kornhauser, A. W. "Changes in the Information and Attitudes of Students in an Economics Course." Journal of Educational Research, 1930, 22, 288-298.
- Lazerfeld, P. F. and Thielens, W., Jr. The Academic Mind. Glenco, Illinois: Free Press, 1958.
- Laird, D. S. and Cumbre, C. F. "Experiment in Modifying Ethnic Attitudes of College Students." Journal of Educational Sociology, 1952, 25, 401-409.
- Langey, J. C. "Does Teaching Change Student Attitudes?" Journal of Educational Research, 1956, 50, 307-311.

- Lindzey, Gardner (ed.). Handbook of Social Psychology. London, England: Addison-Wesley Publishing Co. Inc., 1959.
- McLeod, Jack D. "Prediction of Independent Study Performance in Secondary Schools." Ed.D. Dissertation, Stanford University, 1968.
- Mager, Robert F. Developing Attitude Toward Learning. Palo Alto, Calif.: Fearon Publishers, 1968.
- Maguire, Thomas O. "Value Components of Teacher's Judgements of Educational Objectives." AV Communication Review, 1968, 16, 63-86.
- _____. "Semantic Differential Methodology for the Structuring of Attitudes." American Educational Research Journal, 1973, 10, 295-306.
- Malley, David (ed.). A New Look at the Senior Year: Some Promising New Programs. Boston: National Association of Independent Schools, 1967.
- Melnick, Murray. Independent Study-A Review of the Research Literature. Hampstead, N.Y.: Hofstra University, Center for the Study of Higher Education, 1969.
- Neill, A. S. Summerhill. New York, N.Y.: Hart Publishing Company, 1964.
- Newcomb, T. M. Personality and Social Change. New York, N.Y.: Dyden, 1943.
- _____. "The Influence of Attitude Climate Upon Some Determinants of Information." Journal of Abnormal Social Psychology, 1946, 41, 291-302.
- Norton, Scott M. "Thrusts Toward Individualization of Instruction." Clearing House, 1974, 394-395.
- Nottingham, B. "The Measurement of Pupils' Attitudes." Educational Research, 1970, 12, 247-249.
- Oppenheim, Abraham N. Questionnaire Design and Attitude Measurement. New York, N.Y.: Basic Books, 1966.
- Osgood, C. E., Suci, G. J., and Tannenbaum, P. H. The Measurement of Meaning. Urbana, Illinois: University of Illinois Press, 1957.
- Paschal, Billy J. and Williams, Richard H. "Some Effects of Participation in a Summer Upward Bound Program on the Self-Concept and Attitude of the Disadvantaged Adolescent." Journal of Negro Education, 1970, 37, 34-43.
- Remmers, H. H. "Generalized Attitude Scaling Technique." National Education Association Proceedings, 1934, 369.
- Renz, Leland R. "A Model of An Independent Study Program for Modular Flexibly Scheduled Secondary Schools." Ed.D. Doctoral Dissertation, University of Minnesota, 1970.

- Sears, Pauline S. "Implications of Motivation Theory for Independent Learning." The Theory and Nature of Independent Learning, Gerald T. Gleason, Editor. Scranton, Pa.: International Textbook Company, 1967, p. 46.
- Sewell, Edward G. "Effect of Classwork on Attitudes and Understanding of a Group of Secondary School Pupils." Journal of Educational Research, 1963, 57, 131-136.
- Speckhard, Gerald P. "Evaluating the Modular Schedule." North Central Quarterly, 1967, 41, 302-305.
- Stevenson, C. M. "Effect of a Course in Minority Group Relations on the Attitudes of College Students." Progressive Education, 1955, 32, 19-21.
- Trump, Lloyd J. "Curriculum Changes for the Sixties." National Association of Secondary School Principals Bulletin, 1963, 47, 13-21.
- _____. "Independent Study Centers - Their Relation to the Central Library." National Association of Secondary School Principals Bulletin, 1966, 50, 45-51.
- Wagoner, George A. "Individualizing Instruction: When and How." Business Education Forum. Washington, D.C.: National Business Education Association, 1973, pp. 27-28.
- Warr, P. B. and Knapper, C. The Perception of People and Events. Chichester: John Wiley, 1968.
- Yamamoto, K., Thomas, E., and Korn, E. "School Related Attitudes in Middle School Age Students." American Educational Research Journal, 1969, 6, 191-206.
- Yawin, Robert Arthur. "The Effects of an Independent Study Program Upon Selected High School Student's Attitudes Toward High School, School Subjects, and Classroom Procedures. Ph.D. Doctoral Dissertation, University of Connecticut, 1972.